

1 CHAIR: I'd like to continue
2 with the adjudicatory hearing on the application of
3 Tennessee Gas Pipeline Company for the Londonderry 20
4 inch replacement project, Docket No. 00-01. We are
5 continuing with the panel presented by the Applicant and
6 cross-examination by Public Counsel.

7 ATTORNEY WAGELING: Thank you, Mr.
8 Chairman. I believe that when we left off yesterday Mr.
9 Richardson had stepped forward to answer a question, and
10 I know that it was described as "panel creep." And I
11 can certainly leave my remaining questions for the next
12 panel if that's more convenient to the Applicant and we
13 can move on to other things and we can get back to that
14 later. It's certainly no problem to me either way.

15 ATTORNEY SMITH: I think, if I have in
16 mind the questions that you might be thinking of asking,
17 you might want to ask those questions of this panel and
18 the next panel. If you could tell me what particular
19 subject area you are contemplating than maybe I could be
20 more helpful?

21 ATTORNEY WAGELING: Well, the subject that
22 we were talking about, the comparison of the New Mexico
23 pipeline and the New Hampshire pipeline, what concerns
24 are usually addressed by Tennessee, how they potentially

1 failed in New Mexico and, therefore, what can we do
2 differently with this?

3 ATTORNEY SMITH: Two points, I think,
4 are important. One is the people from Tennessee Gas
5 Pipeline Company don't have any direct, personal
6 knowledge about New Mexico at all. That none of the
7 folks at Tennessee have ever had any line responsibility
8 for that system, which is a separate system out in the
9 western part of the United States, so they wouldn't know
10 about that, have never been a part of their job
11 responsibilities. They have come here because we
12 anticipated, after the meeting of counsel, that there
13 would be questions from counsel, and perhaps from the
14 Committee too, that were inspired by that incident,
15 prepared to address the types of issues that arise
16 surrounding pipeline safety. And we realize that
17 there's some public information about possible causes in
18 New Mexico and we tried to familiarize ourselves with
19 what those are so they can answer those, in effect,
20 hypothetical questions. "If that were the problem, what
21 do you think about that? How do you do it differently
22 here in New Hampshire, and how could we be assured that
23 that wouldn't happen here?" That's how they've thought
24 about how to be helpful to everyone on that. This panel

1 --

2 ATTORNEY WAGELING: And, frankly, that's
3 my intent in my questions. It's nothing more than that.

4 ATTORNEY SMITH: And, secondly, this
5 panel is framed so that we have people who are familiar
6 with the safety and blasting issues. The next panel are
7 people who are focused primarily on environmental and
8 water issues. I think, from your perspective, there's
9 a little bit of an overlap from your expert's analysis
10 there. And that's why I said you might want to ask some
11 of those questions having to do with water crossings and
12 corings and so forth, construction, of either of these
13 panels, depending on which side of that issue you want
14 to go to. But again, the construction, safety, blasting
15 issues really ought to be directed to this panel, not
16 the next one.

17 ATTORNEY WAGELING: And, with that in
18 mind, if Mr. Richardson could step forward and I'll
19 continue asking him the line of questioning I was
20 involved with yesterday. Which, really, that I was
21 enjoying your accent so much yesterday, I wanted to come
22 up with some more reasons to ask you questions.

23 **CROSS-EXAMINATION OF PANEL BY ATTORNEY WAGELING:**

24 Q I believe that yesterday you had explained to us all

1 that the intent of a pipeline company, and a pipeline,
2 is to monitor gas impurities and liquid in the gas. You
3 had gone through the various intents of the pipeline, --

4 A (By Mr. Richardson) Yes.

5 Q The filter separators that you spoke of. And with those
6 the concern is, I guess, or the purpose of those, is to
7 take out those impurities in the liquid --

8 A Yes.

9 Q And also to ensure proper design of a pipeline and
10 prevent low flow within the pipeline?

11 A Yes. There are some self-serving features here. One of
12 them is that the impurities in the pipeline do cause
13 maintenance problems and expenses, and the pipeline's
14 very interested in keeping that at a minimum. The
15 filter separators take out both solid impurities and
16 liquids. There is what is termed a "dump system" on
17 most filter separators, and it pulls the moisture out
18 and stores it in a tight (inaudible), usually, or
19 something of that nature. There's several versions of
20 that. But the idea is to keep the impurities in the
21 pipeline to a very minimum. And as the pipe moves from
22 the production area to the market, the more of these it
23 goes through the cleaner it gets, at some point reach a
24 point where there's not enough impurities there to be of

1 consequence. And what we really try to do is to limit
2 the amount of moisture that gets into the gas in the
3 first place. And we're relatively successful at that
4 except when conditions change, when, for instance, a
5 load changes dramatically, a cold wave hits, and a lot
6 of the gas has to be brought home. And sometimes upset,
7 because of conditions like this, cause some liquids to
8 get past our initial drying efforts and, at that point,
9 then we catch the liquids and the solid particles
10 farther on upstream. And, as a consequence of that, we
11 have to run what are called "cleaning pigs." These are
12 devices that you put in the pipe and push along and it
13 pushes the impurities out at the other end. These are
14 kind of swabs that --

15 Q Cleaning pigs?

16 A Yes, as versus intelligent pigs.

17 Q Okay. Now, --

18 A These are pretty dumb pigs.

19 Q So, is that different from calliper pig?

20 A No. A calliper pig is a semi-intelligent pig. It's a
21 device that manages to measure the distance across the
22 pipe in the various planes so that you get a picture of
23 whether the pipe is dented or has ovality, or anything
24 of that nature. And so, we called it a semi-

1 intelligent.

2 Q Now, as I understood the testimony of the panel,
3 including yourself, yesterday, it was my understanding
4 that you're presenting a picture for us that you adhere
5 to these intentions. That Tennessee Gas prides itself
6 on its safety history, and clearly these things that you
7 just outlined for us are things that you have in mind at
8 all times?

9 A Yes. Yes, definitely.

10 Q And so, it would be fair to say that all of these are in
11 place, or were in place, in the New Mexico pipeline?

12 A Let me -- Can I interject and just say, let me just be
13 sure and remind you that I've retired and I still think
14 of myself as a Tennessee Gas employee, but I'm not
15 really. And when I retired El Paso and Tennessee had
16 not merged. So I'm not really in a position to speak in
17 a great deal of detail about El Paso. I've had
18 associations with El Paso has a, I guess, a competing
19 pipe lab during my career, and I was always impressed
20 with El Paso. And I think they've done an excellent job
21 with Tennessee since they've taken over the company.
22 But I don't know that much in detail about El Paso
23 itself. I do suspect that they have the same motives
24 that we did and that they were trying to protect their

1 pipeline the same as we are. I would expect that.

2 Q And, by that, I would assume then, that you did not have
3 any particular involvement with the New Hampshire
4 pipeline system that is managed by Tennessee, the eight
5 and the 12 inch thick currently run?

6 A I was not directly involved in the construction of them.
7 I was probably, let's see, I was involved with codes and
8 standards that we used during part of that period of
9 time but I wasn't actually involved in the construction
10 of the pipelines up here.

11 Q What I think I'll do is I'll ask some other members of
12 the panel to address some of those issues. But before
13 I let you go, so to speak, keeping in mind the tragedy
14 in New Mexico and other things that people in the
15 industry have learned over the years, but I think
16 particularly of interest for people of New Hampshire is
17 that most recent tragedy, are there any other conditions
18 that you can tell us might improve the safety of this
19 pipeline as compared to what was already being used and
20 put into place in New Mexico? And if you don't have a
21 basis of knowledge to be able to answer that just
22 because, as you've already explained, you don't have
23 particular experience with the New Mexico pipeline, just
24 let me know and I'll go back to the panel.

1 A I have never seen that crossing and my only knowledge of
2 it is from the Internet information that I picked up
3 from the OPS web page regarding the pictures of the
4 accident scene and such. All I can say is that they did
5 find, apparently, significant internal corrosion there,
6 and that would indicate that they did have impurities in
7 the liquids at that point. They probably had low enough
8 flow, and that was a low place in the land, so that
9 those liquids and impurities dropped out at that point
10 and apparently were able to stay at that point long
11 enough to cause damage to the metal wall. And I think
12 that would be very improbable up here because of the
13 location of New Hampshire relative to the storage fields
14 and the production. And that's about all I can add to
15 that.

16 Q And understanding that as a basis for concern, of the
17 liquid or the impurities of the gas that are coming into
18 New Hampshire, would it be fair to say that there could
19 also be put into place other safety precautions on that
20 pipeline that would add to the safety of the pipeline?
21 For instance, pigs, like you've just described, the one
22 that's hungry -- I'm not sure what you called it.

23 A The dumb pig.

24 Q The cleaning pig, and the use of other types of pigs

1 that could further ensure the integrity of the pipeline
2 to include a calliper pig and an intelligent pig?

3 A This is one of those things if you run a cleaning pig
4 through a clean pipeline you don't get anything. It's
5 kind of like we've talked about the intelligent pig. If
6 you intelligently pig a new pipeline you don't get
7 anything. It's --

8 Q Let me interrupt, just for a second.

9 A Sure.

10 Q But, for argument sake, Mr. Richardson, there's nobody
11 within the pipeline industry that would sit before me
12 and tell me that they thought that impure and gas full
13 of liquid was flowing into New Mexico. If there's
14 precautions that we can put into our pipeline so that we
15 can verify that the pipeline is safe, aren't we being
16 proactive on safety?

17 MR. HAMARICH: Let me take that.

18 MR. RICHARDSON: Go ahead.

19 A (By Mr. Hamarich) With all due respect, I want to
20 answer some of these questions --

21 Q Sure.

22 A Because we specifically went over issues yesterday.
23 This is a different pipeline than New Mexico. This is
24 a pipeline that's being designed in the year 2000. It's

1 being built in the year 2001. New Mexico, I understand,
2 was a 1950 vintage pipeline. I understand from reading
3 the reports that it was never hydrostatically tested.
4 I understand that it didn't have a configuration where
5 it was able to be pigged, therefore, -- I also
6 understand that there was a possibility it was near
7 production fields and, due to the low flow conditions,
8 there may have been these liquids and impurities. So
9 let's separate that. That's New Mexico. This is New
10 Hampshire. This is a pipeline -- And you asked, is
11 there additional precautions? There are several
12 additional design parameters here that I went over
13 yesterday that are completely different than New Mexico.
14 This line will be hydrostatically tested. This line
15 will have cathodic protection and coating. This line
16 has never -- It has dry gas. It has a history of dry
17 gas. That gas is monitored in two locations. At
18 Dracut, Massachusetts there's a chromatograph that I
19 think was installed two years ago. Over --

20 Q Can I just interrupt you for a second? The
21 chromatograph?

22 A Chromatograph checks gas quality.

23 Q Thank you.

24 A Okay. And one of Tennessee's things -- There's a couple

1 reasons. It's a way of checking certain gas quality.
2 And we put that in in a lot of receipt points throughout
3 the system. We've had programs. We have many gas
4 chromatographs in the system now where we can check at
5 most delivery points. And, in fact, we have one in
6 Dracut, Massachusetts, which is the start of this
7 pipeline, so we will know exactly what type of gas is
8 entering at that point. We also --

9 Q In terms of liquids and impurities?

10 A I'm not --

11 A (By Mr. Kleinhenz) Well, you've got your water content.

12 Q I'm sorry, I can't hear the witness.

13 A (By Mr. Kleinhenz) I'm sorry. In terms of your gas
14 quality you also know your water content, so that would
15 give you an indication of how dry your gas would be.
16 Again, that's the factor when you start talking about
17 wet gas that gas chromatograph picks up.

18 Q Okay. I just want to make sure that that device is
19 going to test for liquids and impurities, is that what
20 you're telling me?

21 A Water content.

22 Q And impurities?

23 A (By Mr. Hamarich) Right. And we'll also have, part of
24 this project, at the proposed meter station site where

1 we're going to put in additional metering at an existing
2 site in Londonderry, we're also going to have a
3 chromatograph that will specifically measure the
4 properties of the gas when it leaves to go to
5 EnergyNorth and eventually to the power plant. So we've
6 got two checks there. So, in regards to that, I really
7 want to make it known to the Committee that this is a
8 separate project than New Mexico. And we're willing to
9 answer questions, in general, about pipeline safety and
10 how it's designed in this project, and we're willing to
11 talk about what information we have on the operating
12 conditions of the 12 inch and the eight inch, and keep
13 it in that perspective.

14 Q The checks on the quality by the chromatograph, how
15 often is that going to be done? Is that a constant
16 test?

17 A That's a constant test that's --

18 Q Okay. We had talked some yesterday about the pigging,
19 and I'll just go back to it very briefly. You had
20 discussed with us the fact, and correct me, please, if
21 I'm wrong, that the smart pig, or the intelligent pig,
22 you didn't feel would serve any purpose because it would
23 provide a baseline analysis of the pipe in a pipe that,
24 based upon your specs, shouldn't have any difficulties

1 when it's put into the ground and it's first commencing
2 its use?

3 A That's correct. That's the premise of our argument,
4 that an intelligent pig as recommended by the Committee,
5 or by the PUC, within three years of operation. In
6 other words, the conditions stated to Tennessee Gas is
7 we recommend that an intelligent baseline pig run be run
8 within three years of operation. They're not saying the
9 first day of the third year that that baseline pig be
10 run. That's what the condition is. Our discussion is
11 if we follow all these procedures, and put in a new
12 pipeline, we have a new pipeline. That's a baseline is
13 the perfect pipeline. When the operations and the
14 regular maintenance program mandates internally that we
15 run this pig, then we would use that as the baseline
16 comparison of perfect pipeline.

17 Q If you were required to run the intelligent pig within,
18 I guess that Mr. Marini had suggested within the first
19 three years, the results that we would anticipate
20 receiving is an interior perfect line? Is that correct?
21 Am I correct so far?

22 A (By Mr. Kleinhenz) For a baseline, right.

23 A (By Mr. Hamarich) For a baseline.

24 Q Maybe I misunderstood --

1 A (By Mr. Hamarich) No corrosion is what we're getting
2 at.

3 Q Exactly. Maybe I'm missing something here in terms of
4 its use. Wouldn't it be fair to say that that would be
5 the perfect baseline upon which all further testing
6 should be compared? If that is an internally perfect
7 line as far as corrosion, and that you would have that
8 information based upon the use of the intelligent pig,
9 isn't that exactly the type of data that we would want
10 to have so that we could go back --

11 A Who would want that data?

12 Q The state and, I would assume, Tennessee, so that you
13 could maintain consistent with that perfect baseline --

14 A Yeah, but that's not -- Let me just explain. What it
15 measures is corrosion wall loss. It's going to go
16 through -- It's not going to establish anything. It's
17 not going to tell us anything. So our point is, why run
18 it? It's not going to establish anything. The rule
19 making, the proposed rule making before OPS, and I may
20 be misstating this, is that they're looking at making
21 all pipeline companies run a baseline pig and it'll be
22 of existing lines and it'll be phased in over the years.
23 That is still in discussion within OPS. If that becomes
24 a regulation, or when that becomes a regulation, that

1 will become part of the pipeline's maintenance program.
2 And we've been very proactive in pigging our pipelines,
3 Tennessee Gas Pipeline. Since 1984 we've pigged, and I
4 can't quote the amount but, we've pigged several
5 pipelines. And we believe through that pigging program
6 that we've upped the integrity of our pipeline
7 considerably throughout the United States. That program
8 is a program that we're doing as a company. They're
9 evaluating how that would be mandated as part of the
10 regulations, and we're aware of that and we're following
11 that program. But to have a new pipeline be pigged,
12 we're just not convinced that that's going to do
13 anything to enhance the safety of the pipeline.

14 Q Thank you. I understand -- I believe I understand your
15 position now. I have some other questions, moving away
16 from pigs, and I'd like to ask a few questions about the
17 valves. Again, just so we have a better understanding
18 of the difference, my understanding, Mr. Kleinhenz, is
19 that your company's position is that the response time
20 on an automatic valve is superior to the remote valve
21 because it activates due to pressure loss?

22 A (By Mr. Kleinhenz) That's correct.

23 Q And you don't need any human intervention?

24 A That is correct.

1 Q In reading your pre-filed testimony, it was my
2 understanding that it doesn't need any independent power
3 source?

4 A It is activated off pressure.

5 Q And again, just so, maybe I'm the only one in the room
6 that doesn't understand how that will work, how will it
7 work if it doesn't have a power source?

8 A It's operated off the gas stream itself so it's a gas
9 pressure activator that triggers the auto close device.

10 Q So the minute there's, I guess, depending upon how it's
11 set, the minute there's a pressure loss, or a pressure
12 change of that significance, the valve will
13 automatically activate?

14 A Right. At a set pressure loss it will activate.

15 Q In terms of the class of pipes, you've described for us
16 that a significant amount of the pipeline would have
17 been a Class 1 pipe but that you all had agreed to
18 increase it to Class 2?

19 A That is correct.

20 Q And I believe your testimony yesterday included a
21 statement that Class 3 is the highest safety factor type
22 of pipe?

23 A In this area.

24 Q Is that just for --

1 A In this area. The highest safety factor pipe that we
2 have on our entire system, which is only in one
3 location, would be a Class 4 which would be in a high
4 rise area.

5 Q Okay. So there are, obviously, different higher classes
6 pipe that are out there?

7 A That would be the highest.

8 Q And I want to indicate that we very much appreciate the
9 fact that you've agreed to increase it to a 2 and the
10 particular places that you've agreed to change it to a
11 Class 3. But what I'd like to ask you is, as you can
12 imagine from the pre-filed testimony and certain
13 statements that have already been made in this hearing,
14 there's quite a bit of concern for the pipeline
15 traversing near the schools and the schoolyards. Is
16 there any reason, separate from class, that a Class 3
17 pipe could not be implemented in and around the
18 schoolyards and schools that this pipeline is traveling
19 through?

20 A We have a Class 3 pipe in those areas that are close to
21 schools.

22 Q What about the schoolyards?

23 A Any areas that are within 300 feet of a school we will
24 install Class 3 pipe.

1 Q That wasn't in your pre-filed testimony, so I appreciate
2 that. I was not aware of that.

3 A And that also includes Maldoon Park. We'd also install
4 it at Maldoon Park. That's an area in Pelham.

5 Q Thank you. I have some blasting questions actually.
6 Mr. Kretschmer, actually, I don't know if it would be
7 helpful to you, I'm going to refer some to your pre-
8 filed testimony and I happen to have a copy.
9 Particularly in the area of No. 14 within your pre-filed
10 testimony, you had made a variety of statements and I'd
11 like to -- Actually, you have notes all over that one.
12 I'm going to see if I have a cleaner one.

13 A (By Mr. Kretschmer) Yeah. That's okay.

14 Q Those are all my notes. Just ignore them. You won't be
15 able to read them anyhow. You made the statement that
16 ground heave is an independent factor to consider to
17 protect the existing pipeline and ensure that there is
18 no danger to the welded steel pipe creating a potential
19 failure of the pipeline's integrity. And I might not be
20 quoting it exactly but that's the general gist of it, is
21 that fair to say?

22 A That line was actually lifted from Haley & Aldridge's
23 peer review.

24 Q But that's a statement that you had adopted, apparently,

1 in your pre-filed testimony?

2 A Yes, I will adopt that.

3 Q During your testimony here yesterday it appeared to me
4 that you were suggesting to the Committee that ground
5 heave is not a problem on this project and shouldn't be
6 of concern?

7 A If -- Following the blasting specifications of Tennessee
8 Gas, we'll implement here that there will be no ground
9 heave.

10 Q How can you -- Upon what basis do you make that
11 statement?

12 A Well, they've specified a specific ground vibration
13 maximum at the pipeline. This ground vibration is an
14 elastic movement with no deformation. If you don't
15 exceed that, you can't move the ground. You have to go
16 way over that specified maximum ground vibration in
17 order to move, deform the ground and actually move it.

18 Q What type of failure of the pipeline's integrity are we
19 talking about? If there are concerns that ground heave
20 can cause that, what exactly are we talking about?

21 A My discussion with the operations people with Tennessee
22 Gas has stated that the actual movement of this pipeline
23 could be in the realm of feet before any failure would
24 occur. What they're looking at -- I believe somebody

1 has noted a cold bend situation, and it would have to be
2 an extremely significant movement of the pipe to cause
3 the damage. That's what I've been told by operations.

4 Q So, that statement, "a matter of feet," that's really
5 coming from the Tennessee people --

6 A Yes.

7 Q That you're getting that information? Okay. Besides
8 ground heave, in terms of movement, is there any other
9 mechanism that could affect the integrity of the
10 pipeline that you're aware of?

11 A From the blasting specifically, no.

12 Q What about block movement?

13 A Block movement would be ground heave.

14 Q So you would bunch those in together?

15 A Absolutely, yeah.

16 Q And again, just so I'm clear, it sounds as if you're
17 basing your opinion on information that you've received
18 from other people, that is, when the integrity of the
19 pipeline would be affected?

20 A Yes.

21 Q In terms of the movement of the pipeline during
22 blasting, again, it sounds as if you're relying back on
23 the peak particle velocity criterion that we analyzed
24 that would result in the point .008 movement?

1 A Elastic movement.

2 Q Elastic movement. Is that the only movement of the
3 pipeline during the blasting that you see occurring?

4 A Yes.

5 Q When you say that it will be kept to a minimum, are you
6 talking about that .008 criterion?

7 A The criteria of .008 is based on a peak particle
8 velocity and associated very high frequency, which you
9 can actually measure the ground displacement. That
10 ground displacement may actually be more or less,
11 depending on the frequencies of that and depending on
12 the vibration. If the vibration's under four inches per
13 second it's going to be, obviously, less. The movement,
14 again, is elastic. It moves that far and then returns
15 to its original state, so there is no change. With
16 blast vibration, it's something that goes through a
17 building or a structure and if it doesn't exceed certain
18 levels it's not going to cause any damage.

19 Q So, in your opinion, there's no possible way that any
20 permanent movement of the ground will occur during
21 blasting? It's solely elastic grounding?

22 A According to the specifications. And if those
23 specifications are adhered to there will be no movement.

24 Q While I understand that there seems to have been a

1 decision from Tennessee to keep it at that level of the
2 4.0 per second resulting in the elastic ground movement,
3 can you tell us what tolerable limits of maximum ground
4 heave should be established for this pipeline
5 construction project?

6 A I don't consider myself to be able to place a limit on
7 that ground heave because I'm not a pipe engineer. The
8 people that I have spoken to have discussed things in
9 the realm of way over what's been suggested. They're in
10 feet for movement of the pipe without concern. And
11 specifically, it goes back, we discussed other ground
12 vibration, which would be earthquakes, and pipelines in
13 southern California have experienced massive movements
14 with no failures. Obviously, there's failures during an
15 earthquake but the pipelines have experienced massive
16 movements in feet, back and forth, with tremendous
17 stresses with no damages. So this pipeline, the
18 specifications that we're attempting to adhere to and
19 setting on this pipeline are not going to cause those
20 types of movements.

21 Q What we're really talking about isn't necessarily
22 displacement of the pipe. Isn't it displacement of the
23 pipe over how many feet or the distance? I mean, with
24 an earthquake, if it's a relative term, if there's a

1 certain amount of movement within a very short distance,
2 for instance, if a section heaves five feet within a two
3 to three foot section, that's clearly different from a
4 five feet movement over a period of hundred feet, would
5 you agree with me?

6 A Yeah, I'll agree with that, sure.

7 Q And in terms of that sort of distinctive movement, do
8 you have an opinion that you can provide to this
9 Committee as to what the limits should be of ground
10 heave or block movement as it relates to what we've just
11 discussed, that is, feet over a distance?

12 A No, I don't.

13 A (By Mr. Kleinhenz) If you don't mind, let me clarify
14 something --

15 Q Sure.

16 A While we're discussing ground heave and the reference
17 that Paul had made to the movement of pipe. When we
18 were in discussion with ground heave and talking about
19 the peak particle velocity, the controlling factor that
20 we talked about was the peak particle velocity. And
21 when discussing about ground heave, an analogy was made,
22 in discussions with Paul, about how much a pipe could
23 actually move before it burst. And what was alluded to
24 was when we do a bend of a pipeline, just like, for

1 instance, you're going down a creek or something, we
2 actually stretch, we actually bend the pipe where if you
3 looked at it from a deformation standpoint it would be
4 well under feet. In terms of ground heave, actual
5 calculations, it is not exactly equivocal in terms of a
6 cold bend versus a ground heave, but it was a kind of
7 analogy that if somebody had looked at a ground heave of
8 two inches, that would not be what we would consider
9 substantial knowing full well the elasticity of a
10 pipeline. We're able to move it from its original plane
11 in feet.

12 Q In terms of movement of the pipe as compared to what
13 you've just talked about, a sudden movement of a pipe
14 over a short distance caused by either block movement or
15 ground heave, do you all have statistical information
16 that you can provide to the Committee as to what limits
17 should be placed on this project before the integrity of
18 the pipe is put into question?

19 A I do not have that information.

20 Q On No. 16 of your pre-filed statement you had indicated
21 that the measurement of ground heave will be done by
22 checking the elevation of the ground, or the pipe,
23 before and after the blast. Could you explain to the
24 Committee how that will be done specifically, and do

1 that both for blasting that occurs in the wet as well as
2 the dry?

3 A (By Mr. Kretschmer) Well, to establish elevations is
4 what you want to do. You set a benchmark that's not
5 going to move, typically a nail in a tree or some rock
6 that's going to be there, and you just set and shoot an
7 elevation at that point. And with a level you can swing
8 around and shoot elevations anywhere. As long as you've
9 got one point that you can shoot from, you can obviously
10 check elevations. And that elevation would be checked
11 before and after.

12 Q Clearly what's of concern is the movement of the pipe.
13 So, as it relates to what you've just described, are you
14 more specifically going to be measuring either by
15 surveying instrument, level rod, as it relates to the
16 pipe as compared to a tree that's in the vicinity? I
17 guess I --

18 A The reason you set it on a tree is that tree obviously
19 isn't going to move. It's not going anywhere. If you
20 put a nail there and set an elevation at that point and
21 swing around, based on that elevation and bringing the
22 cross level you can see the difference in the elevations
23 between the two. And you can check that both before and
24 after. It's a common construction practice.

1 Q What are you going to do in the wet?

2 A In the wet, I would check both sides of the pipeline.
3 I really haven't addressed anything in the wet, hadn't
4 even thought about it.

5 Q And it's clear that, at least by the description that
6 you've provided to this Committee, that these heave
7 measurements are going to be taken both before and after
8 any blasting that occurs near any of the existing
9 pipeline?

10 A Yes. And my testimony also stated that I don't believe
11 there's going to be any heaves. So what I would do is
12 take the first number of shots, and as long as the
13 vibration level was maintained there's no reason to
14 think there's going to be any ground heave. And staying
15 within those vibration levels then there's really no
16 need to take those measurements.

17 Q Are you going to take the measurements or not then?

18 A (By Mr. Hamarich) This is going round and round here.
19 I want to just make sure we're all on the same
20 understanding. What Paul testified to, the question was
21 about ground heave. What if you did ground heave? This
22 is how you'd measure it. You asked a specific question,
23 "Are you going to measure ground heave?" All our
24 specifications are designed for peak particle velocity.

1 At that peak particle velocity we've never, I'm not
2 saying it's right or wrong but, we've never measured
3 ground heave. And our whole basis and our whole premise
4 of our blasting program to protect the pipeline and the
5 public is not to measure ground heave. So, --

6 Q So you're not going to measure --

7 A At this point our current plans were not to measure
8 ground heave because we don't find that with the method
9 that we're going to control the blast. The method is
10 with the peak particle velocity. But the question and
11 the testimony was, "If you measured ground heave, how
12 would you measure it?" So I don't believe the intent
13 was there that we're going to measure ground heave. But
14 I think that's the discussion we need to have here is
15 what your opinion is on ground heave. Why you think
16 it's important. Why you think it's going to do
17 anything. And the point we wanted to make is if we have
18 ground heave, our design is such that the ground heave,
19 we feel it'll be minimal. You asked if we set a limit
20 --

21 Q I think that --

22 A It won't be three feet but I can't guarantee you, today,
23 there's going to be zero ground heave there.

24 Q I think there might have been a misunderstanding between

1 the parties that that was an agreement and it,
2 obviously, is not so.

3 A I wanted to clarify that.

4 A (By Mr. Kleinhenz) And the other thing is is that to
5 measure ground heave you would not necessarily have to
6 measure before because you could, more or less,
7 establish your natural contour baseline on each side of
8 your heave if it became an issue. So it's not something
9 that would have to have a pre-elevation done.

10 ATTORNEY SMITH: Can I try to clarify
11 the point I think that you've been dealing with here.
12 From my perspective, what I understood the witnesses to
13 say before today, and today, was that they don't expect
14 much ground heave at all. There might be some but it
15 would have to be --

16 ATTORNEY GOODMAN: Objection.

17 ATTORNEY SMITH: It might be --

18 ATTORNEY GOODMAN: Are you characterizing
19 the witnesses' testimony? I don't understand what's
20 going on.

21 ATTORNEY SMITH: I don't think it
22 matters much. Can I just finish?

23 ATTORNEY GOODMAN: I really -- I think
24 that it does matter.

1 ATTORNEY SMITH: Well, because Public
2 Counsel was asking whether there was an understanding
3 between us as to whether there would be measurement of
4 the ground heave. And the testimony that you pointed to
5 in paragraph 14 --

6 ATTORNEY GOODMAN: Could I have a ruling
7 by the Chairman --

8 ATTORNEY SMITH: Can I --

9 ATTORNEY GOODMAN: That this is allowed?

10 CHAIR: Continue.

11 ATTORNEY GOODMAN: Thank you.

12 ATTORNEY SMITH: You pointed to
13 paragraph 14, I think it is?

14 ATTORNEY WAGELING: Yes. Actually, I
15 think it went on to 16 also.

16 ATTORNEY SMITH: Yes. And I'm just
17 trying to be clear about what I think that says, and you
18 can go ahead and ask the witnesses further if you'd like
19 to. I think what the witnesses are testifying to is
20 that ground heave isn't expected to occur much at all.
21 Mr. Kretschmer's testimony is that he can measure ground
22 heave. What I understand to be his testimony here, and
23 in the pre-filed testimony, is that if he operates with
24 the parameters we've proposed, up to the four inches per

1 second velocity, and they observe that there is not
2 ground heave, then really the question that you may want
3 to pursue is "He doesn't intend to keep measuring ground
4 heave determining that there isn't any?" That's how I
5 understood what we put forward in the case. So it's
6 really a question of how often you have to confirm that,
7 I think, at least that was my understanding as counsel,
8 and you can pursue that with them if you'd like to.

9 Q And following up with what Mr. Smith just indicated, my
10 concern and what I'd like for you to address is, how can
11 you tell us, without doing testing, that there was or
12 was not ground heave? It sounds as if you're going to
13 be observing it, and I'm not sure what observing means.
14 Is that somebody watching the pipe from afar or are you
15 going to have level rods out there surveying instruments
16 set away from the blast area?

17 ATTORNEY ROCHWARG: I have to pose an
18 objection, at this point, to the witnesses talking
19 amongst themselves during the course of their being
20 sworn in, Chairman. I'd like a ruling on that.

21 CHAIR: The consultation on a
22 panel is allowable so, let's continue.

23 A (By Mr. Kretschmer) I think the situation with ground
24 heave and the actual movement of the pipe is a very

1 integral part of Tennessee Gas' safety program on this
2 particular construction. I've been associated with
3 other pipeline programs, other pipeline constructions,
4 constructions next to pipelines, have read numerous
5 studies on gas pipeline integrity, and in my readings
6 and research I have found no cases where ground heave
7 has deformed a pipe to cause a failure. The peak
8 particle velocity that Tennessee Gas is specifying for
9 their pipeline is four inches per second. I've
10 testified and noted in my testimony prior that a
11 pipeline, properly constructed pipeline, and in my
12 experience and in my research we have found that
13 pipelines, steel welded gas pipelines, high pressure,
14 can withstand on the order from eight to 12 inches per
15 second of vibration. That's elastic movement. So the
16 specification that Tennessee has set out is about three
17 times less than the maximum that the pipeline can
18 sustain. Also, those levels of vibration, those eight
19 to ten inches or 12 inches of peak particle velocity, is
20 not a deformation or a movement of the ground. At that
21 level that ground hasn't moved. It will not move,
22 alright? So what we're saying here is if we stay within
23 those realms of peak particle velocity, of vibration,
24 that we will not move the ground so there's no need to

1 measure the ground heave.

2 Q I believe I understand your position. What is going to
3 be the process if the limit that you've just been
4 describing of four inches per second of peak particle
5 velocity which, by your calculations or the calculations
6 of the industry, result in .008 inches of elastic
7 movement, what were you going to do if that limit is
8 exceeded during your blasting?

9 A What you would normally do is look again at the blast
10 program and make changes, if necessary. The most
11 important thing is digging free face and making sure
12 that the material being blasted has someplace to go.

13 Q And when you indicate that that's what you would
14 normally do, is that what's going to be done in this
15 project?

16 A Yes.

17 Q I know we talked quite a bit about the Bureau of Mines'
18 criteria, the ground vibration particularly, which is RI
19 8507. And I know that one of the discussions that I had
20 with counsel prior to the hearing is just to ensure that
21 what we're talking about, specifically as it relates to
22 that section of the Bureau of Mines' criteria, is
23 Appendix B?

24 A Yes.

1 Q And I had indicated that I would like to have that
2 marked as an exhibit. I have multiple copies Mr. Dustin
3 was kind enough to provide. So, with the panel's
4 permission, how about if I have you look at it so you
5 can indicate that is what we're talking about? And if
6 anybody would like a copy of it -- Is that Appendix B
7 that is applied to 8507?

8 A Yes.

9 ATTORNEY V. IACOPINO: Just a minute. What
10 are we marking this?

11 ATTORNEY WAGELING: I don't have any
12 problem if we keep on with the numbers of the Applicant
13 just so that the record --

14 MS. BOLDUC: We're at eighty-two.

15 ATTORNEY WAGELING: I'm sorry?

16 MS. BOLDUC: Eighty-two.

17 ATTORNEY WAGELING: Eighty-two, I believe,
18 would be the number, and I think that there is a
19 numbering system of A-82. And I have no difficulty,
20 just for convenience sake, if it goes in as a continuing
21 exhibit within that list unless the Committee has an
22 objection to that. I only have a few more questions.

23 Q Involving that same issue of ground vibration and peak
24 particle velocity, it's my understanding that those

1 numbers are going to be set at the adjacent pipeline,
2 that is, the 12 inch that will remain in the ground, is
3 that correct?

4 A Yes.

5 Q What is Tennessee going to do when there are the
6 situations where you're moving away from that pipeline?
7 How will that criteria be maintained when the pipeline
8 is not there?

9 A (By Mr. Kretschmer) As they've stated, and the
10 specifications state, is you establish that ground
11 vibration at that pipeline. That four inches per second
12 is at the pipeline no matter where you are.

13 Q Are you talking about at the pipeline trench for the 20
14 inch or are you talking -- It was my understanding that
15 we were talking about the adjacent structure, which was
16 the 12 inch pipeline running adjacent?

17 A Correct.

18 Q There are situations where the pipeline, that is, the 20
19 inch trench, is moving away from the 12 inch pipeline?

20 A Okay.

21 Q What will Tennessee do to maintain the criteria listed
22 in the Bureau of Mines' criteria when that 12 inch
23 pipeline adjacent structure is not there?

24 A The peak particle velocity at the pipeline, even when

1 moving away, would stay at that level.

2 Q How are you going to measure that?

3 A It could be measured on a seismograph. If you're moving
4 away the vibration's getting less.

5 Q This is a very practical question. I don't mean to be
6 beating a dead dog but when you add the 20 inch trench
7 that you're digging, that you're blasting for, under 90
8 percent of it, at least, that 12 inch pipe is going to
9 be running adjacent?

10 A Yes.

11 Q On those occasions when it is not there, and it's my
12 understanding that these specific criterion that the 4.0
13 per second ppv and the air blast over pressure, all that
14 is measured at the 12 inch pipeline location, is that
15 correct?

16 A Yeah.

17 Q When that location does not exist because the 12 inch
18 pipeline is 20 feet away now or, not 20 feet away, 100
19 feet away, where are you going to put the measurement to
20 maintain the same criteria of 4.0 per second?

21 A Let me see if -- What we're discussing is here, is this
22 here. I think the question should be framed as, "How
23 are we going to protect structures adjacent to the
24 pipeline?" The four inch per second level that we're

1 suggesting at the pipeline will remain four inches per
2 second. As we move away from it, at a hundred feet
3 away, if we get the four inches per second there we've
4 got some massive blasting going on and it will not
5 occur. I think the question you're asking is, "How are
6 we going to protect structures that are closer to the
7 blasting than the pipeline?" I don't understand your
8 question.

9 MR. HAMARICH: Can I consult with my
10 panel here? Is it okay for a minute?

11 CHAIR: Sure.

12 ATTORNEY ROCHWARG: Just to clarify,
13 Chairman Varney, --

14 CHAIR: Yes.

15 ATTORNEY ROCHWARG: I wasn't objecting to
16 the witnesses on the panel consulting but there was some
17 consultation going with the audience in the back.

18 CHAIR: Oh, I wasn't aware of
19 that. Thank you.

20 Q Are you all set?

21 A (By Mr. Hamarich) Sure.

22 Q As you know, there is a difference of opinion between
23 Haley & Aldridge and Tennessee as it relates to the 200
24 versus 300 feet surveys?

1 A (By Mr. Kretschmer) Yes.

2 Q And my understanding of the concern that was raised by
3 Haley & Aldridge involved the fact that if we're dealing
4 with blasting that's going to go on and there's an
5 adjacent pipeline, and Tennessee will agree to keep the
6 criterion as noted, 4.0 per second, then the concerns,
7 as it relates to that 300 versus 200 feet survey,
8 minimize. Because obviously if the pipeline, the 12 inch
9 pipeline, is adjacent to where you're blasting, and
10 you've agreed to keep the vibration limit as noted, then
11 we've agreed to recommend that we move from 300 back
12 down to 200.

13 A Yes.

14 Q Our concern, and what I'd like for you to address is,
15 what happens when that other adjacent pipeline is not
16 there? Are you maintaining the same criterion when that
17 pipeline is not there, the other pipeline?

18 A For the pipeline, yes. For other structures, no. The
19 pipeline maximum specification for peak particle
20 velocity will remain 4.0, and that's just the number.
21 For other blast vibration for closest structures to the
22 project, we plan on maintaining this established
23 guideline. This is a blasting standard that is used
24 throughout the country. It's an industry standard that

1 all blasters attempt to adhere to. That's how you
2 design your blast, to keep it within these limits and
3 preferably a bit lower. And that's an industry standard
4 that will be held in this situation if blasters want to
5 protect the closest structures. The pipeline is a
6 structure that can obviously take more vibration than
7 possibly a home that's close to it. So we intend to
8 monitor at the closest structures not under the control.
9 We're going to monitor the pipeline but we're also going
10 to monitor at the closest house if it's within a
11 reasonable distance, and we will maintain these blast
12 specifications.

13 Q I think we have an understanding of our different
14 positions. Thank you. I'd like to move on to the pre-
15 blast surveys of water quality and water pressure. In
16 and around No. 18 of your pre-filed testimony you
17 discuss that water pressure, there would be a survey of
18 water quality and water pressure. What do you mean by
19 "water pressure"?

20 A This is not the final pre-filed testimony. That would
21 have been changed in my final pre-filed. So this is
22 probably a draft because I know that I had discussed
23 previously with Stewart to change these items. The
24 water pressure, I don't know how you'd measure that.

1 Q I think that's the way it did go in, sir, but. Why
2 don't we talk about -- What do you mean by water
3 pressure?

4 A (By Mr. Hamarich) Can we go back for a second to the
5 last one, just for clarification? I think your concern
6 was, and let me try to paraphrase it, if we're within
7 ten feet of the pipeline, you're saying four feet four
8 second, we're going to protect that pipeline. There are
9 areas we deviate. I don't even know if the farthest
10 area is probably not 60 feet in some areas, some others.
11 And I think the question was, "Are you going to maintain
12 those same blasting criterion, blasting protocol, as we
13 go along through the pipeline, even when we move ten or
14 15 feet on that?"

15 Q Yes.

16 A And we would agree to maintain that protocol through the
17 blasting.

18 A (By Mr. Kleinhenz) Treat it like there was a pipe
19 within ten feet. I think that's what you were trying to
20 allude to?

21 Q Yes. That's what I thought I was getting at.

22 A And, yes. Yes.

23 Q Obviously badly.

24 A So, in essence, where we deviate, we will --

1 Q You will make believe there's a pipeline still there and
2 maintain the same criterion with that?

3 A Exactly. Correct.

4 Q Now, how are you going to do that?

5 A Well, you would set up -- You monitor that same
6 location.

7 Q By putting a seismograph, for instance, ten, 15 feet
8 away from your blasting site?

9 A Right. Correct. Correct. Yes.

10 Q Thank you. So, getting to the water pressure --

11 ATTORNEY M. IACOPINO: Marguerite, may I
12 interrupt for a minute?

13 ATTORNEY WAGELING: Sure.

14 ATTORNEY M. IACOPINO: Just from the
15 Committee's standpoint, we have pre-filed testimony of
16 Mr. Kretschmer and you've mentioned that there's water
17 pressure references in there?

18 MR. KRETSCHMER: Paragraph 18.

19 ATTORNEY WAGELING: Is that in there or
20 did I get a bad copy?

21 ATTORNEY M. IACOPINO: No, it's in there.

22 ATTORNEY SMITH: You can ask or I can
23 ask.

24 ATTORNEY WAGELING: That's fine.

1 ATTORNEY SMITH: I'm being informed
2 that for everyone to focus on question No. 18 in Mr.
3 Kretschmer's testimony, Exhibit A70. At the end of the
4 first paragraph the three words appear "and water
5 pressure" in a sentence that says, "There'll be a pre-
6 blast survey of water, wells and springs requires
7 testing for water quality and water pressure."

8 ATTORNEY WAGELING: Right.

9 ATTORNEY SMITH: And so, I think the
10 witness would like to say something about whether the
11 words "and water pressure" were supposed to be in his
12 pre-filed testimony.

13 A (By Mr. Kretschmer) It was a note that was in a draft
14 and I had specifically requested it be removed because
15 I didn't understand what it was.

16 Q So I guess that means you can't tell me what it means
17 then, right?

18 A Nope.

19 ATTORNEY SMITH: And so, what you're
20 really saying is you'd like to amend your testimony and
21 it was an error?

22 A (By Mr. Kretschmer) Yes, please. Yes.

23 Q What would you indicate should be completed during the
24 pre-blast survey as it relates to water sources near and

1 around the pipeline blasting?

2 A Typically what my firm has always done is just a water
3 quality test unless something else is required, which
4 would be a quantity or a yield test. And, depending on
5 the time of year that these are conducted, you could get
6 some wild fluctuations in the same well within a period
7 of a number of months, that's both in quality and
8 quantity. So what you're doing to take that well test,
9 you're providing a snapshot of that water quality and
10 quantity or yield at that day. It could change from
11 environmental stresses at a later date with or without
12 blasting or construction, or anything going on.

13 Q And how do you test for quality and quantity?

14 A For quality you just, obviously, take a sample and do a
15 base test, a water potability test. And for quantity it
16 would be a draw down to find a point where the static
17 level of the water lowers to a point where as you're
18 removing it that level is staying the same so you can
19 find out what amount of water is coming into the well.

20 Q But the recovery rate is over time?

21 A Yes, exactly. The recovery rate, exactly.

22 Q In terms of post-blast surveys, again, I think it's
23 noted still in No. 18 of your pre-filed testimony, you
24 talk about the fact that it's documentation of an area

1 of alleged damage. Do you mean by that to state that
2 we're talking solely about above ground structures or
3 does that include anything else?

4 A That would be above ground structures, residences.

5 Q And would it include only surveys if there was a damage
6 claim made?

7 A Yes.

8 Q And what about wells? How would you provide -- Well,
9 let me ask it this way. Does your reference to post
10 blast surveys include wells at all?

11 A If it was alleged that there was some damage to the
12 well, yes, it could.

13 Q So, again, we're going back to the fact that there would
14 have to be an allegation of damage for you all to do the
15 post blast survey in that location?

16 A (By Mr. Hamarich) That's basically what was filed in
17 our environmental construction plan. Just for
18 reference, all this was filed in our environmental
19 construction plan and in the application as to pre-blast
20 inspections within the 200 feet of structures and homes,
21 and a sample of some water wells in the vicinity. And
22 the way the process works is when the contractors
23 contract, they hire a licensed blaster and then this
24 licensed blaster gets a permit. And then we would hire,

1 Tennessee would hire, someone to do these inspections
2 pre and post, and that's the whole process. So I just
3 want everybody to understand that it's all stated on the
4 record, and everything, and it's been mandated by, well,
5 it's been agreed to as standard practice.

6 Q What I'm trying to verify, however, is the terminology.

7 A Okay.

8 Q Post blast surveying, as far as Tennessee is concerned,
9 only includes allegations of damage. You are not going
10 out to residences or water sites, or other structures,
11 and conducting post blast surveys unless there's an
12 allegation of damage provided first?

13 A (By Mr. Kretschmer) That's what I've stated.

14 A (By Mr. Hamarich) And that's correct.

15 Q And that would include any well quantity or quality
16 surveying?

17 A (By Mr. Kretschmer) Yes.

18 Q Okay.

19 A (By Mr. Hamarich) And as a clarification, I guess, it's
20 understood the pre-inspection is to determine the status
21 of the well or the structure prior to so that you can do
22 a comparison. That's the difference.

23 Q And just as an aside, how long do the owners of these
24 structures and wells have to make an allegation of

1 damage before you'll ignore them?

2 A (By Mr. Kleinhenz) I don't think that's addressed in
3 our plan.

4 Q And would it be fair to say that it would be more
5 prudent for Tennessee to simply go out and do these post
6 blast surveys so that later on people cannot come back
7 and claim damage within a time frame that everybody
8 thinks is unreasonable? I mean, I don't know what kind
9 of numbers of wells, water sources, or structures we're
10 talking about.

11 A (By Mr. Kretschmer) If I could, blast damage is very
12 specific and you do have to get two levels of vibration
13 to cause any damage. The levels of vibration that will
14 be coming from here, while they may seem excessive to
15 people and the human body, is very sensitive to
16 vibration, and many people have an emotional response to
17 blasting. Many people feel that it's a heck of a lot
18 more than what it actually is. And when I say it's a
19 comparison of closing a door, etc., or kids running up
20 and down or jumping, it's real hard for somebody to put
21 those together, especially when they actually feel the
22 blasting. That's why seismic information is gathered.
23 You go out to the structures, take the seismic
24 information. You can then calculate, knowing the

1 distances and what was used within the shot and the
2 actual vibration at other areas, you can calculate
3 within a reasonable amount of what the actual blast
4 vibration would be at another home. As I say, certain
5 levels have to be attained before any damage could be
6 incurred. The levels that we're stipulating to here in
7 RI 8507, I've stated earlier, in yesterday's testimony,
8 that these levels have, in fact, been exceeded almost by
9 an order of two before any damage was actually found.
10 This is a very conservative level.

11 So in order to have allegations of blast damage, to
12 do proper inspections and blast analysis, you have to
13 know the vibration, calculate the vibration at those
14 distances, and certain parameters have to exist before
15 any damage can be incurred at all. Most of the time
16 your house, on a daily basis, has more stresses than
17 what we're stating here. It has more stresses just from
18 daily temperature, humidity changes, activity within the
19 house, has higher stress levels than what we are stating
20 that we will maintain from our blasting. So in order to
21 have blast damage certain parameters have to be
22 attained, and if those weren't attained than maybe
23 there's some other reason for it.

24 Q In talking of those vibration calculations you had

1 indicated earlier that at a hundred feet, as it goes
2 out, it would be .08 inches per second and that at 200
3 feet it would be .02 inches per second?

4 A Yes.

5 Q How did you get those calculation estimates?

6 A It was based on what was allowable to maintain that four
7 inches per second at the pipe. And calculating
8 backwards you come up with a pounds per delay and you
9 can then make those calculations at other distances.

10 Q I don't think I have anymore blasting questions. I
11 might but, thank you.

12 A (By Mr. Hamarich) Can I follow up with one question?

13 Q Sure.

14 A The blasting specs, as far as the inspection, should we
15 inspect everything afterwards or everything before?
16 With the conservative blasting specs that we're
17 proposing, we think the risk of damaging structures,
18 wells, and things, is minimal. And it is a decision on
19 our company that we've historically decided to pre-blast
20 when requested, do post blast when the claim comes
21 forward. You are correct, if we do not do claims on
22 everything then we are subject to receiving a claim
23 later and having to deal with that at that time and
24 rectify that situation. So it comes down to a decision.

1 And, at this point, our decision has been we feel the
2 risk is minimal that these claims will come back. That
3 doesn't mean a year after we leave that someone doesn't
4 come back with that claim. And, in fact, that has
5 happened once or twice on projects over the last 20
6 years.

7 Q That you're familiar with?

8 A That we're familiar with. That I'm familiar with.

9 Q I have just actually a few more questions, more
10 generally, I think, to the panel, and I'm not sure who,
11 in fact, or if it should be the other panel. So I'll
12 throw them out and if we need to wait and -- I know that
13 there was discussion of the maintenance protocol, and
14 included in that you discussed having the helicopter
15 pass that would occur and I think also walking the line
16 on occasion. In terms of the long-term impacts that
17 could occur, obviously there's potential for damage due
18 to downward movement of the surface material in and
19 around the areas surrounding the pipeline. And from
20 what I gathered from reading the ECP and so forth, that
21 you indicate that the routine inspections are going to
22 take place to ensure that the pipeline's maintained as
23 it relates to those issues. Other than walking or -- I
24 shouldn't say other than. You've indicated you'd be

1 walking the line and having the helicopter passes. In
2 terms of this particular pipeline, how often are those
3 routine inspections going to be done and is there
4 anything other than those two items, that is, walking
5 the line and the helicopter passes, that will be done to
6 determine erosion, or I think the term is subsidence?

7 A (Panel) Subsidence.

8 Q Subsidence.

9 A (By Mr. Hamarich) Okay, I think we're talking two
10 issues. Let me try to separate them.

11 Q Sure.

12 A What's referenced in the ECP, are you talking about
13 damages to the pipe when the ground settles or
14 something? Can you clarify that part and then we'll
15 talk --

16 Q Yes, I'm talking about that and erosion that might occur
17 during the monitoring life of the pipe.

18 A Okay. During the construction, according to the ECP and
19 according to our procedures that we follow, we want to
20 make sure that the pipe is backfilled properly so that
21 the pipe has good padding around it and it's backfilled
22 in such a manner to prevent subsidence. It's backfilled
23 with material without voids and we have a good bedding
24 for the pipe. Now that doesn't always guarantee that it

1 happens, so we try. And so, after new construction,
2 part of the monitoring program, and our environmentalist
3 can expand on this later but, part of our monitoring
4 program, besides looking for wetland revegetation and
5 whatnot, is these subsidence areas and looking at that
6 and rectifying that within the first one, two or three
7 years of the project.

8 Q And how often do you examine that?

9 A And I can't answer that. I would defer -- At this point
10 we have a strict monitoring program from our
11 environmental group as to how that's done during that.
12 There's some timing issues of when we go out and monitor
13 that. Now, that's tied to construction. I want to
14 separate that. That's strictly tied to construction.
15 That has nothing to do with the ongoing operations. As
16 part of the construction permit with FERC, we have to do
17 that monitoring for various things. And say, for
18 instance, for construction we have a contractor
19 warrantied for a year so we want to make sure that we do
20 these checks, and we get our contractor back, and things
21 have to be done correctly within that year, we might
22 say. Then you refer to, I think your second question
23 was the helicopter patrol and the walking?

24 Q Well, actually, I was talking about the concerns but

1 then how you would address them, and there's subsidence
2 but also erosion control, over the more long-term --

3 A Yeah. And, like I said, I'd rather -- We could do it
4 now but -- The actual erosion control, I would rather
5 talk about erosion control, restoration, and that type,
6 with the environmental. As far as the existing pipeline
7 and the patrols, one of the reasons for the helicopter
8 flight, one of the things they look for are those events
9 where people are either working on or near the pipeline
10 and things like you're talking about, maybe erosion that
11 came after a flood event, or something, where there may
12 be some soil removed near the pipeline where we would
13 have to come back and add soil or stabilize the bank.
14 And that could be years after the pipeline's been
15 constructed. And the walks are primarily tied to the
16 cathodic protection surveys and some of the leak surveys
17 and what not.

18 Q We can get back to it with the next panel. What about
19 spill prevention and control methods, is that more
20 appropriate to the next panel?

21 A I'd rather defer that if we could.

22 Q Sure. There's an indication in the ECP of inspection
23 and maintenance records that are going to be kept.
24 Should I direct questions about that --

1 A If you can go to the ECP and then we'll be available to
2 support John on those questions.

3 Q So anything about the ECP you want me to go to the next
4 panel?

5 A I think you can get a much more informed answer.

6 Q That's fine. I'm trying to not waste anybody's time
7 here.

8 ATTORNEY SMITH: I think, too, Mark, of
9 course, will be here and so if you find that you want to
10 move back in his direction he'll still be under oath and
11 perhaps he can be helpful then too.

12 Q In terms of the trenching that's going to go on during
13 the construction, will Tennessee agree to stake the
14 whole 12 inch pipeline during wet trenching to protect
15 that 12 inch pipeline during trenching?

16 A Yes.

17 Q So -- I'm not talking about the beginning and the end
18 during the wet parts. I'm talking every bunch of feet.

19 A (By Mr. Kleinhenz) Every foot, yeah. We'll locate the
20 entire pipe.

21 Q And one of the other issues that potentially would be
22 coming up during the Haley & Aldridge testimony, and I'd
23 like to pose it to you all so that you can provide your
24 opinion to the Committee, would Tennessee agree that an

1 independent state blasting inspector be made part of the
2 UCC who would be provided with the authority of
3 reviewing the blasting plan along with your blaster
4 inspector, who I believe is Mr. Kretschmer, and consult
5 during the blasting project, similar to the EI that is
6 part of the ECP? And I think there's also a safety
7 inspector that's made part of it.

8 A (By Mr. Hamarich) At this time our position is that we
9 would not agree to that. And if you want to ask why I
10 can explain why or I can just leave it like that.

11 Q I certainly don't have any problem with you explaining
12 why.

13 A Okay. The blasting program -- And I'm going to separate
14 it from the environmental program. We've got
15 commitments for an environmental inspector. We've got
16 commitments for helping the PUC fund an OPS-type
17 inspection. The blasting program is a very well set out
18 program. And when we go to our contractor there's
19 strict specifications that the contractor has to follow,
20 and one of those is they have to hire a licensed blaster
21 in the state to do that blasting program and then that
22 licensed blaster has the responsibility to adhere to our
23 specifications, and is a professional in doing that.

24 And we will also have, and I don't know if it will

1 be Paul or who, we will have people doing pre and post
2 monitoring. We will have an inspection team. The PUC
3 will have an inspector and whatnot. And we feel that
4 there will be some conflict, and could be some conflict
5 there, as to who's making decisions and who's actually
6 responsible and who this blasting inspector would,
7 indeed, be. So there's really no need to have someone
8 oversight something if you indeed have a licensed
9 blaster and a licensed contractor and a responsible
10 company to do that. So we're adding on inspector
11 after inspector and it's not as -- I'm sure you would be
12 asking us to fund it, and I want to assure you it's not
13 strictly a money issue because we've gotten into this
14 before. We've had these discussions elsewhere. You
15 have different people making different decisions as to
16 what's going on and whatever. So we have this very
17 specific blasting protocol that we've proposed and I
18 believe, as part of our permit conditions, it will be
19 maybe somewhat different than we proposed but it will
20 still be a strict box that we work in. And that's
21 really our position at this point in time.

22 Q Thank you. I understand your position and you're right
23 about the funding issue.

24 ATTORNEY WAGELING: I have no other

1 questions of this panel at this time. Thank you.

2 CHAIR: Thank you. Town of
3 Londonderry?

4 ATTORNEY GOODMAN: Thank you, Mr.
5 Chairman.

6 **CROSS-EXAMINATION OF PANEL BY ATTORNEY GOODMAN:**

7 Q Mr. Hamarich, I believe you were in the town of
8 Londonderry in a meeting on September 25th. Were you
9 present at that meeting, public meeting?

10 A (By Mr. Hamarich) Yes, I was.

11 Q Oh, okay. And maybe you'll recall Tennessee Gas had
12 agreed to respond to some questions. There was some
13 concern that some material wasn't really available and
14 there was an agreement that we would send a list of
15 questions on to Tennessee Gas. Do you recall that
16 discussion?

17 A Yes, I did, do.

18 Q And I believe the Town Councilor sent on these questions
19 and is asking when the Town can expect a response?

20 A Those questions ended up to me. I believe I received
21 them late last week. I see that they were probably
22 issued the 18th or the 19th. Can you verify that and tell
23 me when they were issued? I think we received them the
24 18th or the 19^h of October. The hearing was on the 25

1 of September and I know which questions you're talking
2 about. I was just --

3 Q I apologize, I don't have the date here when the
4 questions were transmitted.

5 A I think it was probably the 18th, last week, sometime in
6 that time frame. I know I received them, copies of
7 them, our team, on Friday. Your question was -- What
8 we've committed to is to develop those answers, there
9 was a considerable amount of answers, and get them back
10 to you. I don't know if we ever gave a commitment on
11 the time frame as to when --

12 Q Right. I'm asking on the record, in this hearing, when
13 can the Town get the answers to those questions?

14 CHAIR: Have the questions
15 been submitted to this body? Is it an exhibit?

16 ATTORNEY GOODMAN: No, it isn't. Would
17 you like them to be submitted? I have a copy. I can
18 make additional copies. They were questions developed
19 at a public meeting.

20 CHAIR: It would be very
21 helpful to receive a copy of your questions.

22 ATTORNEY SMITH: Can I just -- Mr.
23 Chairman?

24 CHAIR: Yes?

1 ATTORNEY SMITH: The witness has spoken
2 in response to questions from counsel about this
3 informal process. The Town -- I alluded to it
4 yesterday. The Town asked the Applicant to come to a
5 public meeting and answer questions. And then, I wasn't
6 there but I understand there was discussion about the
7 Town submitting further written questions. And we
8 recognize that they were kind of out of this procedure
9 in the sense that the Town didn't give us data requests
10 about these matters so we could have addressed them back
11 at that time, and that is a concern we have. We're
12 trying to be as completely helpful in every respect we
13 can to make our positions clear and our application
14 clear.

15 These questions, which I only saw at the end of
16 last week, I think range from pretty simple and
17 relatively straightforward to pretty complicated areas.
18 If we put them into this record I guess I would like you
19 to make it clear that we have not treated them as though
20 they are data requests. They were requests by the Town
21 at a public discussion down there. And it's difficult
22 to know how much is going to be provided in response to
23 these questions. This Committee will remember that we
24 got late in the process, in another proceeding, a very

1 large amount of information to go out and try to
2 acquire. And I just want to state what may be obvious
3 to everyone. When you go out to get all this kind of
4 information, if you don't have very much time and didn't
5 see it coming, it is extremely difficult to get all of
6 that and get it put together accurately and deliver it.
7 There are reasons why we all try to get some of these
8 things out early on. And we are very, very much
9 concerned that anything we produce in this proceeding,
10 we do our very best to make sure that it's the right
11 answer. This is a challenge, I can tell you, because
12 there's so many different things changing constantly.

13 That's what concerns me about these questions.
14 They come very late in the process. If we were to
15 answer them the same we would have as data requests, it
16 would take a great deal of time to do that. And I do
17 not anticipate the Applicant is going to do that now in
18 response to these questions. We're going to try to
19 provide general answers to them. We are not going to be
20 digging through and producing records and things because
21 there was a time to ask for that in this proceeding and
22 they didn't do it.

23 CHAIR: Thank you. Continue.

24 MR. CANNATA: Mr. Chairman?

1 CHAIR: Yes.

2 MR. CANNATA: Could we reserve an
3 exhibit number if that's going to be filed with the
4 Committee?

5 ATTORNEY M. IACOPINO: It would be 83.

6 ATTORNEY GOODMAN: Thank you.

7 A (By Mr. Hamarich) In response to the request, I'm not
8 going to commit to a date here. We're making a best
9 effort's basis. We've been making a best effort's basis
10 to meet with the Town of Londonderry as a courtesy. We
11 answered several questions that night. As a courtesy
12 one of our teams said -- They asked, "If you weren't
13 able to answer them today can you follow-up with
14 questions?" "Yes, we're more than willing to provide
15 information." I'm not going to commit to when we will
16 answer them.

17 I'm also going to state, for the record, there's
18 several questions there that, really, we will probably
19 not be able to answer, and we will state that in the
20 response that we will not be able to answer in this
21 format.

22 CHAIR: That's fine. Thank
23 you.

24 MR. CANNATA: Mr. Chairman, it

1 probably should be noted that the Applicant is under no
2 obligation to answer these particular questions as part
3 of this proceeding.

4 CHAIR: Correct, and we simply
5 want to provide them for information. Thank you.

6 ATTORNEY V. IACOPINO: J u s t f o r
7 clarification, the Exhibit No. 83 is for the list of
8 questions only, not the answers?

9 CHAIR: Correct. Correct.
10 Are they on Town letterhead?

11 ATTORNEY M. IACOPINO: No, they're not. It
12 appears to be like it was an e-mail or something, is
13 that --

14 ATTORNEY GOODMAN: That's correct, from
15 a Town councilor.

16 ATTORNEY M. IACOPINO: Just for further
17 identification, Exhibit 83 starts off with the name in
18 the upper left-hand corner of Mary Usovicz, U-S-O-V-I-C-
19 Z, NU Connections, 2 Box Court, Salem, Massachusetts
20 01970. I don't know who she is but just for
21 identification of the exhibit, that's how it begins.

22 ATTORNEY GOODMAN: Mr. Hamarich, could
23 you explain who Mary Usovicz is?

24 MR. HAMARICH: Yes. Mary's been

1 working for Tennessee Gas on our community relations,
2 and this is Mary Usovicz. I'm sorry.

3 MS. USOVICZ: Hi.

4 CHAIR: Hi Mary.

5 MR. HAMARICH: I didn't see you slip
6 in Mary. I'm sorry. I was --.

7 **CONTINUED CROSS-EXAM BY ATTORNEY GOODMAN:**

8 Q One of the Londonderry schools was built before
9 Tennessee Gas put in the eight inch or the 12 inch
10 pipes, isn't that correct?

11 A (By Mr. Hamarich) Yes, it is.

12 Q And that's the Matthew Thornton Elementary School which
13 was, I think, once a high school, is that correct?

14 A I know it's the elementary school now and I don't know
15 if it was the high school or not. I cannot answer that.

16 Q And even without the new schools, which were built since
17 the pipelines were put in, Tennessee Gas would have to
18 consider the safety of students in that original school,
19 isn't that correct?

20 A That's correct.

21 Q And, in fact, development occurs all the time along the
22 Tennessee Gas right-of-way in other locations and in
23 this location, right?

24 A That's correct.

1 Q And when Tennessee Gas seeks approval for additional
2 capacity they have to meet the safety requirements for
3 that existing development, isn't that correct?

4 A Correct.

5 Q I'd like to look at your pre-filed --

6 A I want to make one statement. For the record, the
7 school that's being referenced, that was there, at the
8 original when the pipeline was built is 1,500, according
9 to our calculations, is 1,550 away from the existing
10 eight inch pipeline. And secondly, when the middle
11 school was built in 1981, I believe that was built prior
12 to the installation of the 12 inch which was aligned
13 next to the eight inch. And the -- I don't know the
14 exact distance but it was several hundred feet away, at
15 that time, when we routed the 12 inch line adjacent to
16 the eight inch line.

17 CHAIR: Clarification. When
18 you cite distances, are you citing from the nearest
19 corner of the building or from --

20 A Nearest corner of the --

21 CHAIR: Or from the schoolyard
22 that's being used for playground recess or after school
23 activities?

24 A These are nearest corner of the building.

1 CHAIR: Thank you.

2 Q Okay. In your pre-filed testimony, Mr. Hamarich, you
3 discussed, I guess I'll reference it, it's around
4 paragraph 7 and 8, you discussed methods for reducing
5 possible occurrences of pipeline failures. But it is
6 theoretically possible for either this new pipeline or
7 the existing 12 inch pipeline to fail, isn't that
8 correct?

9 A The way this pipeline's being designed, like I explained
10 yesterday, with the pipe we're putting in, the coating,
11 the steel, the construction methods, the maintenance
12 programs that natural gas transmission systems place on
13 their system, are accepted practices that are proven,
14 and we've had a good operating system on this pipeline.
15 And we're going to design and install this pipeline in
16 a safe manner.

17 Q I understand. I understand that you've taken every
18 precaution that your company's aware of in terms of
19 eliminating the risk but there is a potential risk,
20 isn't that correct?

21 A I would say, theoretically, there is a potential risk.

22 Q A theoretical risk? That's fine. And there is also, I
23 want to just clarify, there's a theoretical possibility
24 on the 20 inch and/or on the 12 inch, isn't that

- 1 correct, theoretical possibility of failure or rupture?
- 2 A Theoretically, I suppose when you word it that way, yes.
- 3 Q I'd like to look at -- I think this is Exhibit 65 on the
4 Tennessee Gas list. It's the plan sheets. And I think
5 this is going to be a little awkward with the
6 microphones but we'll do the best we can. In this roll
7 of plans, I'm going to show you what's Exhibit 28. And
8 maybe you want to look at that and tell me what the
9 structures and so on are?
- 10 A And I'm going to defer this question to Eric who can
11 better answer you.
- 12 MR. CANNATA: And could we have some
13 map reference numbers also, please?
- 14 CHAIR: Twenty-eight.
- 15 ATTORNEY GOODMAN: On this big roll of
16 plans, yes, it's 28.
- 17 Q And this is in the Town of Londonderry, is that correct?
- 18 A (By Mr. Kleinhenz) That is correct.
- 19 Q And do you recognize in the bottom, what is this?
- 20 A That's a track field.
- 21 Q I'm pointing to an elliptical photograph.
- 22 A That's track.
- 23 Q That is the track, okay.
- 24 A Correct.

1 Q And then immediately to the right of the track, what is
2 this?

3 A A baseball field.

4 Q And what is this, if you know?

5 A That is a wetland.

6 Q And what is the next open clearing to the right of the
7 baseball field?

8 A That is also a baseball field that's in the process of
9 being completed.

10 Q Okay. And there's some clearing on the, what is that
11 the northern?

12 A West side.

13 Q West side of the pipe. What is that clearing?

14 A I'm not certain what that is.

15 Q So the baseball field is generally on the --

16 A I think it's developing into some other fields possibly.

17 Q Oh, okay. There may be schoolyard fields there, okay.

18 And then the next photograph to the right --

19 A That's the middle school.

20 Q That's the middle school and there's this circular --

21 A Cul-de-sac.

22 Q Cul-de-sac driveway, or something to access that?

23 A Right.

24 Q And now, if you could help me out here. The diagram

1 below this aerial photograph, does that depict -- Well,
2 let me go back to the aerial photograph. The line
3 through here, that shows the pipeline, is that correct?

4 A The dark line is the proposed 20 inch pipeline.

5 Q And could you estimate for me how close that is to this,
6 what did we say this school was, the high school?

7 A Middle school.

8 Q Middle school. Could you estimate for me how close that
9 is to the --

10 A Fifty or 60 feet with the scale --

11 Q Fifty to 60 feet from the middle school structure?

12 A Correct.

13 Q And how close is it to this baseball field?

14 A Depending on where you call the baseball field but the
15 cleared area is obviously about 40 feet.

16 Q And how close to this, what did you say this was?

17 A The baseball field.

18 Q The baseball field also, how close to the edge between
19 --

20 A Probably from the dugout looks to be about 300 feet.

21 Q And to the track, the 20 inch to the track?

22 A About 500 feet.

23 Q And that's about 400, or maybe you want to measure that?

24 Do you think it would be like maybe 450 to the --

1 A It depends on where you -- If you go to the cleared area
2 450, that's close enough.

3 Q And is it possible that it's say a little more than 200
4 feet from this --

5 A Well, I was going from this mark here at the dugout but
6 if you wanted to get in a little closer that's --

7 Q Approximately?

8 A Right. What we did actually, you can see, even at that
9 distance, we went ahead and extended the, which is not
10 reflected on here but -- If my drawings show the final
11 pipeline design we would consider that a Class 3 area.

12 Q Ah, that was my question. Okay. So let's go over that.
13 On the diagram below -- Okay, that's a good point, then,
14 to be made. But on the diagram below you show the class
15 of the pipe that you're going to use for each location
16 on the aerial photograph, isn't that correct?

17 A Correct, yes.

18 Q Okay. I think the witness is showing me a revised plan,
19 is that correct?

20 A This is what we refer to as a red line drawing, and it
21 would be the final. Typically on our filings we do not
22 have final pipeline design information on those. And
23 usually, prior to construction, we'll have the
24 finalization of all the pipeline requirements based on

1 all the wall thickness, and things, and that's when we
2 go through and finalize where we put Class 2, Class 3
3 pipe. And in this situation it was extended, the Class
4 3 was extended to this ballfield here.

5 Q So I guess there's a new line. If you went right about
6 from, is that home plate there?

7 A Yes.

8 Q Okay. If you went directly from home plate, sort of
9 almost perpendicular from home plate, is that the point
10 of location of the start of the --

11 A Right, and that line there marks -- According to DOT
12 requirements we were conservative and made this what
13 they refer to as a Code III, and anything within a 300
14 foot radius of a Code III they require Class 3 pipe. So
15 that's why we went ahead and in our definition, our
16 conservative definition, show that is a Code III.

17 Q Is there mileposts shown on the top of the plan?

18 A No, it is not.

19 Q These are not? What is this?

20 A Those are station marks for the property line list, so
21 that station has no correlation to this --

22 Q To this?

23 A No.

24 Q Is there are marker or mile poster indicator other than

1 that little red line?

2 A No, there will not be. That's why it's referred to as
3 a red line drawing.

4 Q Because you don't have that calculated out yet?

5 A No, no.

6 Q So let me -- You've drawn a red line here somewhere too?

7 A Right.

8 Q And you indicate that's a number one?

9 A That is -- Right. That's the pipe definition which,
10 again, would be correlated down here in the material
11 legend which is the Class 3 pipe.

12 Q So the number one circled on this plan shows Class 3?

13 A Right.

14 Q And what's the number four circled show?

15 A Number four is pipe that has concrete coating on it.

16 CHAIR: Excuse me one second
17 here. Are you reviewing a document that we haven't seen
18 or --

19 A Yes. Well, yes, in terms of --

20 CHAIR: Or have been
21 distributed to the Committee? You're questioning the
22 Applicant on something that we don't even have before
23 us.

24 ATTORNEY GOODMAN: I guess, maybe, we can

1 hang it on the easel. I didn't understand that the
2 plans that were submitted had been altered and I had
3 some concerns because of the thinner wall pipe which was
4 indicated on those plans. And now, apparently, the
5 Applicant is saying, "Hey, we revised those. This is
6 the revision." If the Committee wants we'll hang it up
7 on an easel so we can all see it maybe. I had no idea
8 this existed.

9 CHAIR: Sure. Well, that
10 would be helpful and I think the Committee would also
11 like to receive copies of this information for the
12 record.

13 ATTORNEY M. IACOPINO: I also have a question
14 about the exhibit number.

15 ATTORNEY GOODMAN: It's 62.

16 ATTORNEY M. IACOPINO: So that would be in
17 your list that's in the responses from October 13th?

18 ATTORNEY SMITH: Yes. This book was
19 filed to respond to the state's permit conditions, and
20 it's my understanding that that document that was first
21 used was submitted with this booklet on October 13th as
22 Exhibit 62.

23 MR. PATCH: Mr. Chairman, could I
24 just ask too, when counsel's asking questions if you

1 could be a little more specific about referencing this
2 or that. If you could be more specific about it since
3 we don't have it in front of us. The record isn't going
4 to be very clear on that so.

5 ATTORNEY GOODMAN: Yeah, it's confusing.
6 Thank you very much. Would you like us to clip it up on
7 an easel and bring the easel forward?

8 MR. PATCH: I think that would be
9 helpful.

10 ATTORNEY GOODMAN: Let's try that. I'm
11 going to borrow your easel.

12 (Off the record for break)

13 CHAIR: Could we be seated
14 please?

15 ATTORNEY GOODMAN: Alright. Thank you,
16 Mr. Chairman. Alright, so, to resume here, I guess we
17 should introduce this as another exhibit which would be
18 exhibit 84. Okay, so, --

19 ATTORNEY SMITH: Can I just explain
20 something? It's my understanding that the drawings that
21 you've received up to October 13, which was when we
22 filed responses to the state for our permit conditions,
23 and I just saw documents dated October 16, that those
24 drawings do not reflect the class of pipe, the issues

1 that counsel is inquiring about now, consistently, yet,
2 with the narrative which has been submitted in this
3 record. In other words, it is my understanding at the
4 moment that the Class 3 pipe at this location has been
5 submitted in the document before this Committee. So if
6 you go to those narrative parts of the record you would
7 see that that's what the Applicant is proposing. And
8 what Mr. Kleinhenz, I think, has indicated to me is this
9 is a working drawing and he's literally working on it at
10 the present time where he is making the notations to
11 conform the drawings, because they'll just continually
12 be revised, to match what we proposed to the Committee.

13
14 And so, he has also told me that he needs this
15 document. This is his personal, working document where
16 he's put the red lines on them. I don't have any
17 objection to marking them and assuring the record is
18 accurate in this line of inquiry, but I think he's going
19 to need this document back so he can keep working on it.
20 And perhaps we can arrange to get copies and get them
21 submitted back into the record.

22 CHAIR: Yes. We would like
23 copies that would depict the locations and changes in
24 class of pipe along the route.

1 A (By Mr. Kleinhenz) And what I wanted to clarify was,
2 obviously what we committed to, Class 3 and Class 2, we
3 committed to the Class 2/Class 3 as we've mentioned in
4 our testimony. When I went back through this a second
5 time -- When we calculate class location it's done
6 electronically and they carry distances through. When
7 I came through this area, initially, the electronic
8 information that is based on DOT requirements did not
9 pick this up. So when I came through, whether it was
10 from a conservative standpoint, where they were taking
11 up 300 feet I just said, "Well, whether it is or it
12 isn't, I'm going to go ahead and put a Class 3 here
13 because it's not showing up on our electronic run for
14 class location." It was showing up as a Class 2. It
15 picked it up over here but it didn't pick it here. So
16 what I did was I extended where the Class 3 was all the
17 way back to here. That was based on a review of
18 electronic information according to the DOT.

19 ATTORNEY GOODMAN: Mr. Chairman, --

20 MR. PATCH: When you say 'here',
21 if you could just --

22 ATTORNEY GOODMAN: I was just going to
23 ask Mr. Kleinhenz, I really need to document on the
24 record for the Town, and for the Committee, exactly the

1 locations where Class 3 pipe would be used. And so, I
2 take it that where you've drawn a red line on this map,
3 and it appears below the station which is just, for
4 property purposes, as 200 plus ten, 299 plus ten, right?
5 It's directly below that or not? No, it's further to
6 the west. We don't have documentation of that location.

7 MS. BROCKWAY: I see it, from what
8 the witness was pointing to, I see it as pretty much a
9 view up from the bottom of the baseball field, and
10 between that going to the right on the chart, all the
11 way over to where the school buildings were.

12 ATTORNEY GOODMAN: Well, thank you.

13 A (By Mr. Kleinhenz) Actually, the Class 3 pipe extends
14 beyond this point. This point was just to --

15 MS. BROCKWAY: The school buildings.

16 A (By Mr. Kleinhenz) Yeah, it's over here. This is the
17 point here.

18 MS. BROCKWAY: To the right of the
19 school buildings on that.

20 A (By Mr. Kleinhenz) Right. This point would be at least
21 300 feet, or approximately 300 feet, from the corner of
22 this building here.

23 Q By this building, what building is this?

24 A That is the middle school.

1 Q The middle school. So it's going to be 300 feet past
2 the corner of the middle school as measured along the
3 pipeline easement?

4 A As a radius. If you took a 300 foot radius from that
5 nearest corner, if you took a 300 foot radius from that
6 nearest corner, that would be the location of the end of
7 the Class 3 pipe.

8 ATTORNEY WAGELING: For the record, could
9 you indicate what corner?

10 Q The corner of the middle school, is that correct?

11 A I guess you would say the northwest corner.

12 Q So we have a limitation. The Class 3 pipe will extend
13 from a 300 foot radius of the corner of the middle
14 school, northwest corner of the middle school, and
15 it'll, I'm heading south now, it'll extend how far from
16 the baseball field? Are you going to move it a little
17 south of there or --

18 A Just scaling right here is an example of this. The
19 ballfield itself is a little over 300 feet away, and I
20 think that was the reason --

21 CHAIR: The nearest portion of
22 the ballfield?

23 A Right, at that point. And right here there looked to be
24 a dugout further up, and that's what I ended up picking

1 up at 300 feet. So I, more or less, started the Class
2 3 before that point.

3 MS. BROCKWAY: The dugout appears, on
4 my version of the map, to be along the third baseline?

5 A Correct.

6 Q But there is also a driveway area shown beyond that?

7 MS. BROCKWAY: Or just behind home
8 plate.

9 Q Yeah, behind home plate there's a drive --

10 A Right.

11 Q And then there's a second drive beyond home plate, isn't
12 that correct?

13 A There looks to be a road there. I have not driven that
14 road.

15 Q It's possibly a road or a fence line, it's not clear
16 from the map. But, would it be possible to make the
17 Class 3 pipe 300 feet from that further roadway?

18 A I would have no problem doing that if that's --

19 ATTORNEY WAGELING: Are we talking radius
20 again?

21 Q Three hundred foot radius from the outside. So, I
22 understand that that would be accessible to Tennessee to
23 take it 300 feet from the outside clearing area of the
24 baseball, whatever's cleared and fenced?

1 CHAIR: Do you mean the tree
2 line?

3 ATTORNEY GOODMAN: I think there appears
4 to be a cleared area at the baseball field.

5 CHAIR: Yes. So I'm trying to
6 provide an accurate reference point. So it would be
7 from the tree line --

8 A (By Mr. Kleinhenz) In your drawing, if you see the road
9 where it curves, -- I don't know how to be more
10 descriptive. As it runs from the west to the north, as
11 it turns from the west to the north, basically you're
12 looking at a line at that point to begin the Class 3
13 pipe.

14 MS. BROCKWAY: It appears, on my
15 version of the map, to be at a point roughly east of
16 where a line between the pitcher's mound and home plate
17 would intersect with the clearing, the edge of the
18 clearing.

19 ATTORNEY GOODMAN: Yes.

20 A (By Mr. Kleinhenz) Yes, that's correct.

21 MR. PATCH: Can you tell us what's
22 east, west, north and south on the map that you have in
23 front of us?

24 A Basically this line is running north.

1 Q The line is the pipeline easement?

2 A Right.

3 Q The pipeline easement --

4 A Right. So the ballfield is due east of the pipeline.

5 Q Yes, that's east. This is west, right?

6 A Yes. And again, I want to clarify, this additional that
7 we're willing to do, this is actually not a DOT
8 requirement. Normally the radius is established based
9 on the place where they would be centrally located. In
10 other words, just because there's a road paralleling us
11 doesn't establish a Class 3. What would be the trigger
12 for a Class 3 would be bleachers or stands like that,
13 and your radius would be established based on that. But
14 again, I'm just saying that I'm extending it not because
15 it's actually required by this road, but that's a
16 request that I have no problem with.

17 Q Okay. I have another question for you. Could you
18 describe, briefly, what's a Class 4 pipe?

19 A Well, I'll tell you what, if you would like, we could
20 read straight from the DOT what Class 4 definition is
21 rather than me trying to elaborate on it. It might be
22 easier for me to do that.

23 MR. PATCH: Maybe if you could
24 just run through all the classes and what they all are?

1 I was going to ask you that question anyway. But I
2 think that at this point in the record it might be
3 useful just to have a clear explanation of what each
4 class is.

5 ATTORNEY GOODMAN: Actually, maybe we
6 should ask a couple more questions about this drawing
7 first and then we'll go into that. I do have some
8 questions on that but.

9 Q We've discussed that there is a theoretical possibility
10 of pipe failure, isn't that correct?

11 A That is correct.

12 Q And if you would indicate to the Committee, at this
13 location where there's a red line adjacent to the middle
14 school, if that pipeline were to, if the 20 inch
15 proposed pipeline were to rupture at that location, can
16 you verbally describe a possible damage area that would
17 result from that?

18 A I can't speculate on that. That's very difficult
19 because there's too many factors. I'm not at liberty to
20 say that.

21 Q Can you describe the factors?

22 A Well, obviously there's pressure. There's which line it
23 is and where the location of the rupture on the pipe
24 itself.

1 Q We have a pressure. We have the proposed maximum
2 operating pressure for the 20 inch line, and we have a
3 location, this location right here. You know the pipe
4 that you're constructing. I need an estimate of if
5 there was a failure, such as we described possible,
6 would it be a mile, would it be less than a mile?

7 A In terms of what?

8 Q Of damage or destruction that would be possible.

9 A I've never been involved with actual damages on
10 locations so I couldn't tell you how far that could be.

11 Q But yet, you're making the determination as to how safe
12 the construction of this pipe is for this facility,
13 isn't that correct?

14 A That is correct.

15 Q But then how did you choose 300 feet? Maybe we should
16 be working with 500 feet or a mile?

17 A Again, we're going by reasonable, proven standards from
18 the DOT, and that's what we operate off of.

19 Q Yeah. Well, that's, I guess, is what I'm asking.

20 A (By Mr. Hamarich) Can I intervene here, please? The
21 OPS standards, the class locations, are designed and
22 have that exact question built in. That's why you have
23 Class 1, Class 2 and Class 3 pipe. It's a safety factor
24 based on population density that's built into the code.

1 Q Right. But I think there must be a theoretical
2 possibility of damage, isn't that correct?

3 A What we want to talk about here is, and that's what the
4 300 foot corridor that Eric was talking, when you have
5 a Class 2 you draw that 300 foot circle. The 300 foot
6 corridor is designed -- If you hit that 300 foot
7 corridor that goes to what he was calling a Code III in
8 this case because it's an isolated building, or an
9 isolated ballfield, than at that 300 foot corridor you
10 put in the Class 3. What Class 3 pipe is, it's heavier
11 walled pipe. And the code, basically that 300 feet's
12 built in. I don't have the calculations here to say
13 that but that's why the 300 foot's there.

14 Q So it's your testimony today that it would be an
15 approximate range of safety for a Class 3 pipe to be
16 more than 300 feet away --

17 A No, I'm saying that's the way the code's designed. It's
18 based on population density and it's based on distances
19 from the pipeline within that. We cannot say that --
20 You have to first understand the different failure
21 modes. What is a leak? What is a rupture? What is an
22 explosion? Those are the type of things we can talk
23 about. We cannot say that -- As Eric mentioned, there
24 are a lot of factors in that. The rupture's just a

1 failure in the pipe wall and a sudden release of energy,
2 gas dissipates to the air. There may or may not be fire
3 included, things like that.

4 Q I guess what I'm looking for, then, --

5 A So the code and the design, and all the -- You can't
6 just isolate it to one area, one incident. The code is
7 designed -- That's why you have the different levels of
8 pipe. We've agreed, on this project, to put in Class 2
9 pipe which, if we could get to that answer, it's 60
10 percent pipe. There's areas we could put in lesser
11 pipe, lesser walled pipe. We've agreed to a minimum of
12 60 percent. We've agreed near the school to put in all
13 50 percent pipe. And that is a measure of safety, along
14 with all the other comprehensive programs that we talked
15 about.

16 Q Right. I guess what I'm looking for --

17 A So we're not going to be able to really say, "Okay, if
18 this thing ruptures at this point that there's going to
19 be damage at this point, this point, or this point."
20 We're going to say that the program we have in place,
21 the pipe we have in place, the inherent risk is designed
22 into the pipeline of a failure at that point and these
23 maintenance procedures prevent this failure.

24 Q I understand that you're reluctant to discuss the

1 potential of an explosion and we're reluctant also --
2 Well, I won't go into that but. I still think that you
3 have pipe design factor that you can assume a worst case
4 explosion, and I'm trying to see what the result would
5 be at this location, adjacent to this school where
6 you're willing to put in your pipe, to determine the
7 extent of a worst case explosion. And if you're saying
8 it's 300 feet away, that's an answer. I'm looking for
9 an answer. For Class 3 pipe, how far away is safe in
10 the worst case explosion?

11 A It's not a matter of how far away is safe, it's a matter
12 of safety design built into the pipeline system.

13 Q Then what is your safety design?

14 A The safety design is a Class 3 pipe in this area, along
15 with all the other maintenance programs involved. But
16 strictly the steel, it's a Class 3 pipe in this area.

17 Q A Class 3 pipe, you're saying I want a foot distance
18 away from the pipeline at which you know there will be
19 no damage.

20 A There's no such thing as that.

21 Q So you can't specify how far away damage will occur?

22 A No, I cannot.

23 Q That's an answer.

24 A And no one can.

1 Q And no one can. And --

2 A We can talk about the parameters, and what causes it,
3 and --

4 Q You can talk about pipe design, isn't that correct?

5 A And we can talk about pipe design. We can also talk
6 about failure modes, of what may cause a failure.

7 Q But you can't characterize the risk of damage, isn't
8 that correct?

9 A That's correct.

10 Q And with a second pipeline in this location -- You have
11 a 12 inch pipeline here, isn't that correct?

12 A We currently have two pipelines along this corridor that
13 we've been operating since 1950 safely. If we continue
14 with those parameters, if we put in the right pipe and
15 continue to monitor to prevent third party damages,
16 we're going to testify that we are going to reduce an
17 adverse impact to safety along this corridor.

18 Q But isn't it more complicated because there's a 12 inch
19 pipe with your 20 inch pipe in terms of calculating a
20 potential risk of damage?

21 A There's a couple of -- And I'll try to, maybe, rephrase
22 the question and answer it. There's two pipelines in
23 that corridor. There's two pipelines. Therefore, in
24 speculating, you could speculate that either one

1 pipeline could fail or two pipelines, or one or the
2 other could fail.

3 Q One or the other or both, isn't that correct?

4 A You could speculate that going in your line of thinking.
5 If one, for instance, had failed -- We've had -- There's
6 been no incidents that we've been able -- One line next
7 to the other line doesn't put an inherent risk to that
8 second line of it failing. In other words, should there
9 be some sort of failure or leak or a rupture on one of
10 the lines, that does not directly correlate to any
11 damage being done on that second line. We have several
12 pipelines that we operate in the same corridor. And I
13 want to stress that the safer thing about being in the
14 same corridor is you have an established corridor, you
15 protect the pipe within that corridor, so you have two
16 pipelines in that corridor. And, as I mentioned
17 earlier, third party damage is a leading factor to
18 pipeline failures. And therefore, you're protecting the
19 same corridor. So you got two pipes within ten feet of
20 each other. You've got good protection on that as
21 opposed to those pipes being separated. So, in reality,
22 it may be a safer situation than if the pipes were
23 separated.

24 Q Well, now, I'm a little confused Mr. Hamarich. Isn't it

1 correct that Tennessee Gas actually, in some locations
2 on this proposal, has agreed to move the 20 inch
3 pipeline further away from the existing 12 inch pipeline
4 than the eight inch is now?

5 A There are isolated cases, such as road crossings, where
6 we had to deviate minor footages and some wetlands we've
7 deviated. And I could ask Eric, I think the most we've
8 deviated from the pipeline is, what is it, about 20
9 feet, 30 --

10 A (By Mr. Kleinhenz) No, there's places -- And it's from
11 a constructability standpoint. There is one location
12 where we may deviate, and I could scale it off real
13 quick but, from my memory, it's approximately 80 to 100
14 feet.

15 Q And what do you mean by 'constructability'?

16 CHAIR: We should check. I
17 think earlier you gave an answer of about 60 feet to
18 that question.

19 A (By Mr. Kleinhenz) Let me go ahead and scale it so --

20 CHAIR: I have a pretty good
21 memory so. Sorry.

22 A So we can --

23 A (By Mr. Hamarich) It could be 60 also.

24 A (By Mr. Kleinhenz) Yeah, 60. So if it's at --

1 Q What do you mean by 'constructability'?

2 A (By Mr. Kleinhenz) The two lines, right now, are
3 located on a hill and -- But basically -- The pipelines
4 are located on a hill and to the west side. That's where
5 the existing eight inch is. The hill just drops
6 straight off. And there would be no physical way for us
7 to do that without potentially impeding the safety of
8 the 12 inch so we actually had to move away from that
9 hill and cross the pipeline. It was a much safer place
10 to locate the pipe. So I'll go ahead and scale that.

11 A (By Mr. Hamarich) Meanwhile, for the record, I'd like
12 to make one clarification. At the point where the eight
13 inch and 12 inch pipeline are closest to the Londonderry
14 Middle School, the existing eight inch is approximately
15 40 feet measured to the corner of the school. We did
16 make a change and we are moving the 20 inch pipeline 20
17 feet away from the eight inch. We're going to relocate
18 it to the opposite side of the existing 12 inch
19 pipeline. But we have made that adjustment at that area
20 and are going to remove the eight inch. So that'll move
21 it an additional 20 feet from the school.

22 Q And am I correct that you testified yesterday that that
23 was a safety improvement?

24 A I don't know if we testified on that but it was

1 something that we had discussions. Like I say, we've
2 been talking to the Town of Londonderry, to the schools,
3 for eight to nine, maybe ten months, I think, was when
4 we started these meetings. We've known the concerns.
5 We've been trying to make adjustments for those
6 concerns, and that was one of them. When we looked at
7 the maps, we looked at ourselves and said, "You know,
8 this is the corridor we want to be in but that's a
9 reasonable change," and we put it on the other side just
10 to increase that distance.

11 ATTORNEY M. IACOPINO: Just for the record,
12 is that reflected on the drawings?

13 A Yes, it is.

14 A (By Mr. Kleinhenz) And for the record, that distance is
15 60 feet?

16 CHAIR: Sixty? Thank you.

17 Q And what distance is that you're talking about? The 60
18 foot relocation of the 20 inch pipeline?

19 A (By Mr. Hamarich) Correct. And that was a geological
20 hazard there, the instability of the soil if we removed
21 the eight inch.

22 Q So, is it, in fact, a safety improvement when you
23 relocate the 20 inch line as you were planning to do at
24 the school?

1 A I don't know if it's a safety, per se, safety
2 improvement. It's a little more distance between
3 structures that have been built since the pipeline was
4 installed. There's a couple other cases along the route
5 that we've looked at it and -- Originally, let me go
6 back, when we had the eight inch line here -- When we
7 routed the 12 inch loop line in the 1980's what we did
8 is we tried to, instead of -- If a house was there, or
9 a structure, and we were going to build a pipeline in
10 our corridor, we have two choices on which side of the
11 existing pipeline to build on. We would choose, for
12 most cases, to move the 12 inch away from the structure
13 so that the eight inch would be here. And we don't want
14 to encroach on existing structures or develop any more
15 than we have to, so we would make that move. Now, we
16 moved the 12 inch over on that side. Now what's come
17 back to haunt us a little, now we're removing the eight
18 inch. Now the eight inch is the closest to the
19 structure because we built the 12 inch that way. So
20 there's a few areas that we've actually had to say,
21 "Okay, that eight inch, maybe we want to make this shift
22 over." It's just the best, it's best for maintenance.
23 It's best for the whole program. Whether --
24 Q It's not best for safety?

1 A Inherently it doesn't make it any safer. It's just
2 better for maintenance and it's better for the overall
3 maintenance program. So when we look at it that way,
4 and that we have a better location, inherently it may be
5 a little better for safety but not directly. It's still
6 a very safe system whether on one side of the 12 inch or
7 the other side. It's just a better configuration for
8 long-term maintenance and integrity of our system, but
9 not necessarily -- It doesn't make it any safer.

10 Q It doesn't make it any safer when you're 40 feet from
11 the school to move the pipeline further away?

12 A As I said, the existing corridor's there. We've been
13 able to protect and maintain that corridor. It's an
14 established corridor. We know the conditions on that
15 corridor. We know that we haven't had any erodability.
16 So our consensus has been, as we routed this pipeline,
17 that we've got an eight inch line there, a 12 inch line
18 there. The feeling is that, as we testified yesterday,
19 when we routed this to remove that eight inch line and
20 stay with that same corridor, and do the proper
21 procedures and maintenance, that that is a safe
22 corridor. We would not, as I said in my testimony, we
23 would not design or build or operate a pipeline that we
24 think we could not do it safely. We would not do that.

1 We cannot do that as a company. Regulated or not
2 regulated, we would not do that.

3 Q In your testimony yesterday you discussed internal
4 corrosion as a cause of pipeline failure. And you said,
5 if I can phrase your testimony, that the gas in New
6 Hampshire is dry, is that correct?

7 A Yes, I did testify to that.

8 Q But you also stated that since the 12 inch line was put
9 into service you have not done an internal exam on that
10 line, is that correct?

11 A That's correct.

12 Q You have not pigged that line, the 12 inch line?

13 A Not with a smart pig, no.

14 Q And you testified, I think, that there was a program
15 where the federal government was considering requiring
16 pigging of existing lines in service, isn't that
17 correct?

18 A My understanding is that there's discussions of that,
19 yes.

20 Q And I think yesterday you testified that New Hampshire
21 is just not a high priority on that program, is that
22 correct?

23 A And let me -- Okay. On Tennessee Gas, I want to -- If
24 it came off that way let me change it. New Hampshire's

1 a priority. It's the highest priority right this
2 moment. But, no, seriously, the program that Tennessee
3 Gas implemented on its own, and a lot of other industry,
4 we're not the only one, it's becoming industry standard,
5 even if it's not a regulation, is to have a pipeline
6 prioritization and pigging program. And, as we've been
7 talking about it, we don't want to do things and waste
8 resources doing things that are not needed. And
9 everybody knows there's a resource constraint in every
10 industry, so we have to prioritize those areas that need
11 pigging. So if there's an area with good operating
12 history, good operating records, good pipeline design,
13 good gas quality, and no indications of any need to run
14 an internal inspection tool which looks for corrosion,
15 internal and external, than those things are lower on
16 the priority list. You have areas where you know your
17 pipeline may have those situations. Well, you want to
18 run those intelligent pigs and those smart pigs in those
19 areas.

20 So what I'm saying, I know for a fact that New
21 Hampshire's on the list, the existing 12 inch and the
22 eight inch and six inch that we're not replacing now, I
23 know it's on our list to be pigged because eventually
24 all of our lines will be intelligently pigged. It just

1 hasn't been done up to this point in time. And one of
2 the reasons it hasn't been a high priority is it's got
3 such a good operating record and we're confident of
4 what's in there.

5 Q But you've pigged lines in Massachusetts, isn't that
6 correct?

7 A Yes, we have.

8 Q So it's just New Hampshire that you haven't yet?

9 A We have not come to New Hampshire yet. And I can't say
10 we will be here in the near future as far as pigging.

11 Q And Tennessee Gas recognizes that it's valuable to pig
12 its existing lines? You're not saying it's not?

13 A Absolutely. I'm not here to say that pigging's not in
14 the right program.

15 MR. CANNATA: Excuse me, Mr.
16 Chairman?

17 CHAIR: Clarification?

18 MR. CANNATA: I missed the witness's
19 answer, what he said about what his commitment was as
20 far as being in or not in New Hampshire soon.

21 A I believe that, as far as our pigging program, from what
22 I know, and I can't speak for, I don't want to say
23 specifically the timing but, I know for a fact that the
24 existing pipelines, and portions of the pipeline, will

1 be part of the future pigging program of Tennessee Gas
2 Pipeline, the existing lines in New Hampshire.

3 Q I just want to clarify that as part of its application,
4 and despite this construction, Tennessee Gas has not
5 proposed to pig the existing 12 inch line before
6 undertaking the construction of the 20 inch line, is
7 that correct?

8 A Yes, at this point we have not.

9 Q So your statement that there is no internal corrosion on
10 the existing 12 inch line is based solely on the
11 operating history, is that correct?

12 A Yes, there's no known internal corrosion based on our
13 information.

14 Q You testified yesterday that you had done maintenance
15 activity and occasionally you had seen the 12 inch pipe
16 as a result of those activities, is that correct?

17 A It was mainly -- The testimony was, over the years there
18 has been maintenance activities primarily on the eight
19 inch line and the six inch line further down because
20 those are the more aged lines. There was hydrostatic
21 testing in 1982. Therefore, the lines had to be cut at
22 certain points to install devices to make it piggable.
23 At those times there was pipe removed. And, according
24 to the record keeping of the pipeline safety, you have

1 to keep records of the removed pipe, the condition of
2 the coating, and such.

3 Q Do you have maintenance records similar to that for the
4 12 inch line which you're going to leave in place and in
5 service as part of this project?

6 A Yes, there are maintenance records for all the --
7 According to our OM manual, there's maintenance records
8 on that system.

9 Q Okay. I'd like to consult with my engineer for a
10 minute. Could we make the record of maintenance
11 activities on the 12 inch pipe available for the last
12 five years?

13 ATTORNEY SMITH: Just a minute please.
14 I think now is the time for me to point out, Mr.
15 Chairman, that it's my understanding that the Applicant
16 has not requested this Committee's approval of any
17 change in the 12 inch facility. That is not before this
18 Committee. And I understand the line of inquiry of
19 counsel and where she's going. The testimony, I think,
20 also has been that the existence of the 12 inch line
21 nearby is not relevant to whether the new pipeline,
22 which will replace a 50 year old pipeline, is going to
23 be operated prudently or safely. So I don't believe, as
24 a legal matter, that the jurisdiction that's been

1 invoked here relates to the regulation of the 12 inch
2 line. And I think that counsel for the Town, based upon
3 other positions that we've seen them take, may be headed
4 in the direction of asking for changes in the 12 inch
5 line. I don't believe it's presently before us in this
6 proceeding.

7 CHAIR: Let me just respond to
8 that. I think it's a highly relevant question in that
9 it's asking the panel to substantiate their claims about
10 the condition of the line that remains. And so, I think
11 it is relevant and continue.

12 ATTORNEY GOODMAN: Thank you. Thank you.

13 Q So I guess my request was, on the record, to have a
14 maintenance record for the 12 inch line for the last
15 five years available for review. I don't know if you
16 can do that within the ten day period that we have at
17 the close of this hearing to get documentation. If
18 necessary, we can send the consultant up to your plant.

19 ATTORNEY SMITH: Well, I'd just like to
20 indicate, for the record, that we would object to the
21 request or preserve an exception to the ruling, if
22 that's what it is of the Committee, that we must produce
23 records on the 12 inch line or that there could be any
24 conditions coming out of this proceeding that would

1 apply to the 12 inch line as opposed to the scope of
2 this proceeding, which is that we're asking for
3 approval, as we've explained how we're doing that, for
4 the replacement of the eight inch line with the new 20
5 inch facility. I don't know, as a practical matter,
6 what it would take to get those records, but we want the
7 record to be clear we believe they're outside the scope
8 of this proceeding, even if it is possible to get
9 certain records and produce them as counsel has
10 requested, or this Committee might make an order for us
11 to do.

12 A (By Mr. Hamarich) The records are on, they're available
13 for OPS inspection at our Hopkinton area office, where
14 we operate this pipeline, and also in Houston. And I'm
15 just going to be honest with you, I'm not so sure what
16 the protocol is to bring those records into something
17 like this and what can and can't be released. And so,
18 I really, I really don't know what our protocol is on
19 that.

20 MS. BROCKWAY: Mr. Chairman?

21 CHAIR: Yes.

22 MS. BROCKWAY: I took the thrust of
23 counsel's question and request for the documents to be
24 sort of by analogy, "If this is the track record on the

1 12 inch, is this some foretaste of what we can expect on
2 the 20 inch?" And that's why I understood that it would
3 be of interest to the Committee. Maybe if counsel's
4 witness could go to Hopkinton and look at the records
5 there --

6 ATTORNEY GOODMAN: That would be fine.

7 CHAIR: Sure. And again, I
8 want to make it clear, we're simply trying to
9 substantiate the claims of the panels.

10 ATTORNEY GOODMAN: Exactly.

11 A (By Mr. Hamarich) And let me say, the claim is that,
12 based on everything we've seen, we don't have any
13 indications that --

14 CHAIR: And I would also
15 assume that, given your claim about the conditions of
16 the line and how good it is and, therefore, that it's
17 had few maintenance problems, that there would not
18 necessarily be an overwhelming volume of information
19 that would need to be reviewed.

20 A (By Mr. Hamarich) Except for encroachment reports where
21 people cross us. There's several of those. But yes,
22 you're right.

23 CHAIR: But her questions were
24 relating to the conditions.

1 ATTORNEY M. IACOPINO: Just for the record,
2 Mr. Chairman, --

3 CHAIR: Yes.

4 ATTORNEY M. IACOPINO: I would also point
5 out, this type of information is information which is
6 relevant to the administrative, technical, and
7 managerial experience of the Applicant as well.

8 ATTORNEY GOODMAN: I'd like to clarify as
9 well, if I may? I think that the relevance, there are
10 two points of relevance. One is that the panel clearly
11 made claims that the gas which is coming to New
12 Hampshire is so good that they didn't do internal
13 pigging, or otherwise investigate possible internal
14 corrosion, and they won't need to do that in the future.
15 But there also is the possibility that the existing 12
16 inch line, in the past, has suffered faulty deliveries
17 or other construction problems. I'm going to develop
18 that also, some of the history of that, to ask about the
19 technology used on the 12 inch line. And I think that
20 that's material because it is within ten feet of the 20
21 inch line and it's supposed to be withstanding
22 construction. And it is, I think, also relevant if that
23 line were faulty. If there was some unknown defect in
24 that line then the construction could have an impact.

1 So I think that there are two reasons. I'm not
2 asking for a determination other than the
3 constructability of the 12 inch line and the quality of
4 the gas which they brought into the picture. So, in
5 that regard, I'm going to pursue a few more questions on
6 the 12 inch line.

7 ATTORNEY SMITH: Can I just say, Mr.
8 Chairman, for the record, that I think we could think of
9 this as two points of view. On the one hand it's been
10 suggested by Committee counsel that testimony about the
11 way in which the right-of-way is protected, as the
12 witness has said, or this whole combination of things
13 that are done, it could be said, would relate to records
14 that would show what has been done on the existing
15 right-of-way. But I think the materiality and relevance
16 of the line of inquiry of counsel here really is so
17 attenuated that the line is broken completely when she
18 wants to move to questions about the construction of the
19 12 inch line, whether it might have any defects, whether
20 that could bear, in some way -- This is my most
21 important point, it has not been shown, no one has
22 offered any testimony that I've heard, that the 12 inch
23 line's presence there, after we build and install the 20
24 inch line, is going to make any difference in terms of

1 the proper operation of the new 20 inch line. I think,
2 unless there's some testimony that's forthcoming, and I
3 haven't heard it yet, there isn't any basis at all to
4 pursue a line of inquiry which -- And again, because of
5 the position the Town has taken elsewhere, and we're
6 aware of it, I think what's coming is gradually
7 advancing the idea that maybe we need to do more things
8 with the 12 inch line. And I just want the record to be
9 very clear that we don't believe that's currently in
10 front of this Committee.

11 So, again, Committee counsel suggested there might
12 be questions about credibility or supporting the
13 statements witnesses have made about what they have done
14 to maintain the existing line. But once we move beyond
15 that to operations in the future, I think it's
16 immaterial and irrelevant, and I would like to have a
17 standing objection to where counsel's going.

18 CHAIR: Let's limit the
19 questioning to the information that's already been
20 presented by the Applicant, the allegations or opinions
21 that have been provided by the panelists for the
22 Applicant, including the excellent condition of the
23 existing lines that you have observed over time.
24 Continue.

1 Q So you have not done any ultrasonic thickness gauging of
2 the 12 inch line, is that correct?

3 A (By Mr. Hamarich) Not to my knowledge, no.

4 Q And you're going to continue to operate the 12 inch line
5 while you're constructing the 20 inch line, is that
6 correct?

7 A Yes, that is correct.

8 Q And you testified yesterday that you're going to
9 construct the 20 inch line with basically, best
10 available technology, isn't that correct? You said that
11 you were going to use special coating and special, super
12 round checking calliper pigs, is that correct?

13 A That's correct.

14 Q But those weren't available when the 12 inch line was
15 constructed, right?

16 A No. The 12 inch line was constructed with the same
17 basic, it is the same coating that we have now. It was
18 hydrostatically tested.

19 Q So you're going to use the same coating on the 20 inch
20 line as the 12 inch line?

21 A Twelve inch line, yes. And it's -- Not every company
22 uses that coating but we've been using it for well over
23 25 years.

24 Q And after construction, what would be the extent of

1 examination of the 12 inch line? Would you perform any
2 inspection --

3 A I'm sorry, the 12 inch or the 20 inch line?

4 Q The 12 inch.

5 A After construction of the project --

6 Q Of the 20 inch line, yes.

7 A After construction of the 12 inch line --

8 Q Of the 20 inch line.

9 A Okay. After construction of the 20 inch line, what
10 would --

11 Q Be the extent of your examination of the 12 inch line?

12 A At this point in time we have specific procedures and
13 protocol for surveying and locating the existing 12 inch
14 line and monitoring the construction operation. And we
15 had, as you heard earlier, we testified to a lot of
16 stringent blasting materials and we've got procedures to
17 protect the 12 inch line during the construction. And
18 the 20 inch line will be constructed in such a manner as
19 to not place any harm on the operation of the 12 inch
20 line.

21 Q So, after the construction project is done, there is no
22 examination of the 12 inch line?

23 A No, there is not.

24 Q Okay. We -- There was -- I'm sorry.

1 A Yeah. Let me clarify, other than the normal procedures.
2 It doesn't stop. It's the normal --

3 Q Alright, we'll get into that, I guess,

4 A There is -- Well, I will say, there is a leak test. We
5 have put in our procedures that we will take a leak
6 detector and walk the line after the 12 inch just to
7 verify that everything's there.

8 Q Good. That's --

9 A So there is a leak test.

10 MR. PATCH: Can I just make sure
11 I understand that --

12 ATTORNEY GOODMAN: Yes.

13 MR. PATCH: You said 12 inch.
14 There's a leak test on which line after you construct
15 the 20 inch?

16 A Yeah, I think we're the questioning's going is "Okay,
17 you're building a 20 inch next to a 12 inch. How do we
18 know when you're done with construction with the 20 inch
19 that the 12 inch is in good operating condition since
20 you're building close to that?" And as I did testify
21 earlier, and have in the past, we construct a lot of
22 pipelines next to existing pipelines because we try to
23 route within our existing corridor. So it's something
24 that we've done and we continue to do. So we take great

1 precautions protecting that existing line during
2 construction with extra inspection on it, extra marking.
3 And there is strict procedures written in the
4 application on what we're going to do to protect
5 equipment on it. We've discussed blasting. And one of
6 the other things that we'll do is do a complete leak
7 detection, from start to finish, of the 12 inch line
8 after the installation and construction of the 20 inch
9 line.

10 MR. PATCH: And that's for the
11 whole length of the 12 inch line?

12 A That's for the whole length of the 12 inch line next to
13 the 20 inch line.

14 Q Thank you. You indicated yesterday there was a, let me
15 see if I get this right, chromatograph that you were
16 going to be -- Is that in place now in Dracut?

17 A There's one in Dracut now that monitors the gas quality
18 of the gas entering New Hampshire. We will also install
19 one at the end of the 20 inch line prior to delivering
20 gas to EnergyNorth.

21 Q And how long has the chromatograph been in place in
22 Dracut?

23 A That one's been there -- It's only been two or three
24 years at that particular point. We were monitoring gas

1 further down the system. The reason we had to install
2 one at Dracut was that the new gas that was coming in
3 from Maritimes, just south of there, that was the need.
4 Any time we have gas entering the system, and there may
5 be a change in gas quality, we would install those
6 chromatographs so we have more accurate readings.

7 Q Would those records also be available in Hopkinton?

8 A That -- Either Hopkinton or our gas control record. Our
9 gas quality records are probably available through our
10 gas control system.

11 Q Could we also make a request, on the record, that we
12 have an opportunity to review the chromatograph records
13 that are available, I guess, only for the last two
14 years, again, to verify the allegations yesterday that
15 they have dry gas coming into New Hampshire?

16 ATTORNEY SMITH: I don't want to take
17 any more time than is necessary. We do object to the
18 effort of counsel for the Town of Londonderry to look at
19 records now on the historical operation of the 12 inch
20 line when what's before us is the installation of the
21 new 20 inch line. There were no data requests asking
22 for this information before. And so we'll object, as
23 they continue down this line, to trying to get records
24 of the company about the operation of a separate line.

1 There hasn't been any foundation at all that this
2 information is really needed other than to question, I
3 guess, the credibility of the witness about whether the
4 witness has testified about procedures. We have those
5 procedures, and I appreciate that. But that's the
6 camel's nose under the tent, is my concern.

7 And so, we're going to object to a whole series of
8 questions, if that's what coming, in request to search
9 through the records of the Tennessee Gas Pipeline
10 Company about the operation of the 12 inch line. I
11 don't think there's been any basis for that here. It
12 could have been asked for during the discovery phase and
13 wasn't.

14 CHAIR: Well, this is
15 obviously a question that was raised by your own
16 witnesses. They're the ones who offered up this
17 information and have used it to back up their claim that
18 it's very dry gas with few impurities, and one of the
19 bases for suggesting that this is such a low risk
20 section of the distribution system and all. So I think
21 it's, again, quite highly relevant to simply ask for
22 basic information that backs up the assertion of your
23 panelists. So I think we would want to see that
24 information. Please continue.

1 ATTORNEY GOODMAN: Thank you.

2 CHAIR: Michael?

3 MR. CANNATA: Mr. Chairman, does

4 that make that --

5 Q And we would --

6 MR. CANNATA: Excuse me. Does that

7 make that a record request from the Committee, your

8 previous statement?

9 CHAIR: Well, I think we're

10 going to need to run through those at some point later

11 in the proceeding. So let's duly note that and --

12 ATTORNEY M. IACOPINO: It's my understanding

13 --

14 CHAIR: Go ahead.

15 ATTORNEY M. IACOPINO: The Committee wants

16 the records?

17 CHAIR: Right.

18 ATTORNEY M. IACOPINO: It would be both the

19 request of the Intervener as well as a request from the

20 Committee, and with respect to the maintenance records,

21 as well, which were discussed before?

22 CHAIR: Right. And we'll get

23 to that when the Committee asks their questions.

24 Thanks. Continue.

1 Q Again, in relation to your statements yesterday that the
2 gas coming into New Hampshire has such a low moisture
3 content, could you explain why you're installing a
4 cleaning facility at the Sanborn Road juncture?

5 A (By Mr. Hamarich) We're not installing any cleaning
6 facility there.

7 Q I think you said that there would be a filtering
8 facility before the gas goes to the EnergyNorth
9 pipeline?

10 A No, I don't believe that -- I didn't testify to that and
11 there will not be a filter --

12 Q Just a chromatograph there?

13 A Just a meter station that measures the gas flow and then
14 a chromatograph.

15 Q Does Tennessee Gas ever heat up the gas that enters this
16 system like when it's taking a pressure drop or for some
17 other purpose?

18 A There's been so many changes on that between us and the
19 distribution. I believe, normally, now the customer
20 maintains and operates the heating. In fact, at the
21 Londonderry station, Tennessee does the measurement and
22 then the customer regulates down and does the heating.

23 Q So it's your testimony that Tennessee Gas isn't heating
24 the gas that enters the system?

1 A Exactly. Yes.

2 Q Okay, back to the 12 inch line. Could you describe the
3 extent of external examinations, if any, you've done
4 prior to or will do prior to the construction?

5 A As far as what's been done to date, I don't have
6 knowledge of every inspection that was there. Are you
7 talking about during construction, what inspection --

8 Q No, I mean as part of the Applicant's petition here. As
9 part of your application, do you propose external
10 examination of the 12 inch line prior to construction?

11 A No. Only in those instances where we cross the 12 inch
12 pipeline, where we have to expose it, and possibly in
13 areas where we want to verify the exact location. There
14 will be certain areas along the way that we will expose
15 the top of the pipeline to verify the exact location of
16 that pipeline. We will expose it to the extent to
17 assure the safety of it while we're constructing the 20
18 inch pipeline.

19 Q In that regard, you discussed monitoring as one of the
20 things that Tennessee Gas does to prevent failures. And
21 can you tell when Tennessee Gas last performed an aerial
22 survey or flyover of the existing pipeline?

23 A No, I can't tell you the exact date but I know that, for
24 a fact, that we fly on a monthly basis up here in this

1 area, approximate monthly basis.

2 Q You have regular, monthly flyovers?

3 A I don't know if they're regular, at this point, but
4 fairly regular, according to -- Approximately monthly in
5 this area.

6 Q And would you be willing to commit to a schedule of
7 monthly flyovers once the new pipe is installed?

8 A No, we would not be willing to commit to that. We're
9 going to operate the pipeline in accordance to the
10 federal regulations and, at this point, they do not even
11 require aerial patrols. They require patrols and it is
12 our choice to do an aerial patrol to meet that
13 requirement.

14 Q So, when you said you were doing monitoring, what did
15 you mean if you're not doing monthly aerial surveys and
16 you haven't done internal corrosion checks?

17 A Monitoring the pipeline in the respect -- The term that
18 I use "monitoring" was a term I used monitoring the
19 pressures at our gas control center. We are 24 hours a
20 day. We know every pressure on our system at our meter
21 station locations and all the interconnect points with
22 other pipelines. So we have a computer and scatis
23 system where we get real time data and we're able to
24 monitor the operations of the pipeline, monitor the gas

1 flow within the pipeline. That's what I meant by
2 monitoring. What you're indicating, as far as aerial
3 and others, is what were called patrols.

4 Q Okay. So no patrols, is that correct?

5 A Yes. We do helicopter patrols. We do the foot patrols
6 and such like that.

7 Q But there's no commitment to patrols as a result of this
8 construction or after this construction? There's no
9 obligation to this Committee or to the --

10 A Yes, there is. The obligation is according to the
11 regulations and then the O&M manual that we've developed
12 since then that we've been operating on for the last 50
13 years here.

14 Q Which you said doesn't require patrols, is that correct?

15 A I didn't say it doesn't require patrols.

16 Q I thought you said the federal regulations --

17 A It doesn't require that you patrol with a helicopter.
18 That is a choice of the company at this point in time.

19

20 Q How else would you patrol?

21 A By foot, vehicle.

22 Q As a part of this application, what is your commitment
23 to patrolling?

24 A Our commitment is to patrol according to the

1 regulations. We could read the regulations here.

2 Q Yeah, maybe that would be useful if you could identify
3 exactly what the commitment is because I think the
4 regulations might -- I guess I have a similar -- Well,
5 let me go back. You mentioned a 24 hour surveillance
6 center?

7 A I'm sorry?

8 Q You mentioned a 24 hour surveillance center in your
9 testimony yesterday?

10 A Yes, I did.

11 Q Where's that center located?

12 A That center is located in Hockley, Texas outside of
13 Houston.

14 Q In Texas?

15 A Yes.

16 Q And did it used to be in Hopkinton, Massachusetts?

17 A As long as I've worked for the company it's never been
18 in Hopkinton.

19 Q How long is that?

20 A Twenty-three years.

21 Q So it's been in Texas, okay. If there were a rupture,
22 where would be the location of the employee who might
23 first learn about that rupture be? Where would that
24 employee be? Would they be in the surveillance center

1 in Texas?

2 A It could be the surveillance center in Texas. It could
3 be somebody else on site that's monitoring the system.
4 But more than likely, it could be at that center that
5 would pick up an indication of that if it's indicated
6 through the loss of gas pressure.

7 Q So you're looking at the schedule of patrols, and I
8 guess I have another question along that line. What
9 schedule would Tennessee Gas propose as a part of this
10 application for internal pigging on the 20 inch line?

11 A Tennessee Gas will not commit to any proposed scheduling
12 outside the regulations for the internal pigging on this
13 pipeline as part of this application.

14 Q What do the regulations say for internal pigging?

15 A There are no regulations that require that at this
16 point.

17 Q So there is no commitment for internal pigging on the 20
18 inch line as part of this application, is that correct?

19 A We will run, as part of construction, we will run pigs
20 to fill the line with water to de-water the line and we
21 will run a calliper pig, that I talked about yesterday,
22 that measures geometric deformities in the pipeline
23 prior to construction.

24 Q Right. There's no commitment for pigging once the line

1 is in service?

2 A At this point in time no, unless, through history and
3 maintenance, it becomes part of the program that the
4 need is there.

5 Q In your pre-filed testimony, paragraph 13, you stated
6 that "Extensive destructive and non-destructive testing
7 is performed on the pipeline materials by the
8 manufacturer prior to delivery." Could you provide
9 documentation of that statement?

10 A It's -- Basically it's API 5L pipe specification, with
11 a little bit additional to that for our specifications.

12 Q I'm sorry, what was that?

13 A It's API 5L specifications, standards, and those
14 requirements are clearly stated in those documents.

15 Q You said that you adhere to stringent material
16 procurement and transportation specifications. Could
17 you define those?

18 A Yes. Those are the standards by which we, based on API
19 5L, for instance, for line pipe, we have established
20 strict standards for material such as pipe, valves,
21 fittings, that are sent to manufacturers as part of the
22 purchasing process. And then we've got specifications
23 for how that material is transported.

24 Q Have you made those available in your application?

1 A No, we have not. I will say that these things and the
2 PUC conditions -- One of the PUC draft conditions was
3 that this information be provided a certain amount, and
4 we've committed a certain amount, of time prior to
5 construction starting to the PUC. These are all
6 mandated documents and we've taken them and have those
7 documents.

8 Q Okay. Thank you. You also stated in paragraph 15 that
9 you're going to adhere to a comprehensive written set of
10 construction specifications. Are they part of your
11 application?

12 A No, they are not. We do talk about all these things in
13 the application but they were not, these specific
14 documents were not required as part of the application.
15 They are what is needed to construct the pipeline, not
16 to apply for a permit, based on our understanding of the
17 requirements.

18 Q I have in front of me an exhibit, it says Z-2. I think
19 it describes the auxiliary facilities that you're going
20 to be installing at the Sanborn location, and it does
21 say that there'll be a gas cleaning filter separator.
22 Do you want to look at this?

23 ATTORNEY SMITH: Could you show us
24 that?

1 ATTORNEY M. IACOPINO: Can I inquire where
2 this came from?

3 CHAIR: Yeah, where is this?

4 ATTORNEY GOODMAN: My expert has it --

5 A (By Mr. Hamarich) This is part of the FERC application.
6 It's Exhibit Z-2 of the FERC application.

7 Q Okay.

8 A And this will not be installed as part of this project.
9 This was, when it was filed -- This has been changed
10 since that filing. At that time it was filed that way
11 but in discussions with and final agreements -- When
12 final agreements were developed with EnergyNorth and AES
13 to take that gas, that was not part of the requirements.

14 Q Are they going to install the filter?

15 A I cannot answer that if they are going to install the
16 filter or not.

17 ATTORNEY SMITH: Could you, for the
18 record, explain what this is for everyone's benefit, for
19 the counsel?

20 ATTORNEY GOODMAN: What this is? I think
21 he just said it's a part of the FERC application.

22 ATTORNEY SMITH: Well, I know, but what
23 part?

24 ATTORNEY M. IACOPINO: Where did it come from

1 in the application or the pre-filed testimony so the
2 Committee can look at --

3 ATTORNEY GOODMAN: Do you have the
4 document, the first name of the document? I think it's
5 Exhibit Z-2 of the application filed with the Federal
6 Energy Regulatory Commission.

7 ATTORNEY M. IACOPINO: So, is it a new
8 document or is it something that's been previously filed
9 in this docket?

10 ATTORNEY GOODMAN: No, I don't think it
11 has been filed in this docket. I think it's with FERC.

12 ATTORNEY M. IACOPINO: Could we ask that a
13 copy of it be made part of the record, please, as an
14 exhibit?

15 ATTORNEY GOODMAN: Sure.

16 ATTORNEY SMITH: And I'm trying to
17 understand, I think that this particular document refers
18 to, the subject matter of it is a filter station at the
19 pipeline. And is that correct,

20 ATTORNEY GOODMAN: That's correct, it's
21 cleaning.

22 ATTORNEY SMITH: At the location where
23 the EnergyNorth pipeline would leave this interstate
24 transmission pipeline, is that correct?

1 ATTORNEY GOODMAN: It appears to be an
2 auxiliary facility. It was listed, at one time, as an
3 auxiliary facility of this project.

4 ATTORNEY SMITH: I just wanted the
5 record to be clear of what it is. I was trying to catch
6 up with what you're doing.

7 Q And it's your testimony you don't know whether
8 EnergyNorth is constructing this filter?

9 ATTORNEY SMITH: Wait a minute. Wait
10 a minute. It's also being pointed out to me that this
11 Exhibit Z-2 appears in the FERC application, which we
12 did make a part of the record of the Committee.

13 ATTORNEY GOODMAN: Thank you. So it's
14 already before the Committee. That's helpful.

15 Q Okay. Is it your testimony that you do not know whether
16 EnergyNorth is constructing, or plans to construct, this
17 gas filter at this location?

18 A (By Mr. Hamarich) The way the deal was finalized it's
19 a customer requirement, so it'll be EnergyNorth/AES'
20 project.

21 Q So a gas cleaning facility will be installed at the
22 Sanborn meter location --

23 A I'm sorry?

24 Q On Tennessee Gas property, isn't that correct?

1 A I'm sorry? Can you --

2 Q A gas cleaning facility will be installed at the Sanborn
3 meter station?

4 A Tennessee Gas will not install it --

5 Q No. But it will be at the Sanborn meter location,
6 right, isn't that correct?

7 A Tennessee Gas will not install a filter separator at
8 that point.

9 Q Will EnergyNorth install it at the Sanborn property?

10 A I cannot answer that at this point. We're still in
11 discussions with EnergyNorth as to what facilities
12 they'll install.

13 Q Will there be pressure reduction at the Sanborn facility
14 when you're distributing the gas to EnergyNorth's
15 pipeline?

16 A We pressure monitor -- There'll be -- Over -- Let me
17 see. It's a form of pressure regulation, flow control.

18 Q Flow control. And who's responsible for the pressure
19 reduction at flow control?

20 A We're responsible for flow control. That's the way we
21 manage the amount of gas that's being taken by adjusting
22 the flow. EnergyNorth will be responsible for any
23 reduction in pressure.

24 A (By Mr. Kleinhenz) Just for clarification, Rob Haas,

1 the visiting developer, will explain the process with
2 this cleaning separator. It's typically requested at
3 times by the customer so.

4 Q Thank you.

5 A (By Mr. Haas) Hopefully this will clarify, just a bit.
6 Typically what we found is a power developer is
7 installing their system and asks us to install a filter
8 at the delivery point where we deliver the gas to them.
9 In Tennessee Gas' experience, the filters that we have
10 on the line in Hopkinton and in Agawam, which is our
11 compressor stations, we don't have, really, the need for
12 the filter but we have it there as a course of business.
13 What we advise the power developers are is you really
14 don't need that. However, it typically becomes a part
15 of their requirements from the contractor who's
16 developing the plan. And I'm not a power developer so
17 I don't know all the reasons behind why they want it
18 there. But from Tennessee Gas' standpoint we stand by
19 the statement that it's a clean gas stream, and from a
20 pipeline safety standpoint that filter is not required.
21 It's a requirement for the power developer who has a
22 different set of criteria that they use to protect their
23 system. Does that clarify it?

24 ATTORNEY GOODMAN: Thank you.

1 Q Mr. Hamarich, in your testimony, pre-filed testimony,
2 supplemental pre-filed testimony, paragraph 5, you
3 stated that, "Unlike gasoline, a release of natural gas
4 is not harmful to the environment." Could you explain
5 what kind of gas natural gas is?

6 A (By Mr. Hamarich) Yeah. Natural gas is lighter than
7 air, meaning that it is a hydrocarbon but it's lighter
8 than air so when it's released the gas dissipates to the
9 atmosphere and doesn't collect. And that's what is
10 meant by that statement.

11 Q Is it methane?

12 A It's primarily methane.

13 Q Are you aware that the Clean Air Act regulates releases
14 of methane?

15 A Yes.

16 Q And are you aware that the United States Environmental
17 Protection Agency is concerned because methane is a
18 significant contributor to degradation of the ozone
19 layer?

20 A I'm not aware of that but if that's what you're stating
21 I'll accept that.

22 Q Do you want to retract your statement that a release of
23 natural gas is not harmful to the environment?

24 A (By Mr. Richardson) Everything is relative. I guess

1 even breathing contributes something to the pollution of
2 the air. But the strength in that statement has to do
3 with characteristics of natural gas as versus liquid
4 that's called gasoline. For some reason there's a
5 general misunderstanding when you talk about gas. Is
6 that what you put in your car or is that what powers
7 your stove? Natural gas is primarily methane. It has
8 been found that in large quantities it does damage the
9 ozone layer to some extent. It's nothing like the
10 chlora-fora (ph) carbons, I believe, that air
11 conditioners use that has been banned. And there's a
12 lot of naturally occurring methane coming from the
13 wildlife, for instance.

14 So it's something that is there. It's not viewed
15 as a terribly critical problem right now, as I
16 understand it. But the whole idea is that gasoline, for
17 instance, lays on the ground and kills both vegetation,
18 wildlife, and things of that nature. The methane
19 dissipates to the atmosphere and does not stay around to
20 cause that problem. There are other hydrocarbons
21 involved that are sometimes confused with natural gas
22 also, for instance, propane and butane. Both of those
23 are heavier than air and they will collect in low places
24 and will cause harm to the vegetation and the wildlife

1 in that area so. I think that's where that statement
2 came from. I suppose it's not absolutely correct but
3 it's very close to being correct.

4 Q So more like it's not as harmful, maybe, compared to
5 some other hydrocarbons but there's still possible harm,
6 is that correct?

7 A The harm is to the ozone layer and it's minimal compared
8 with other environmental dangers from other
9 hydrocarbons.

10 ATTORNEY SMITH: If I may, Mr.
11 Chairman? I think there are probably others here that
12 know far better than I but. I think, as a matter of law
13 in New Hampshire, we realize there are volatile organic
14 compounds, many of them generated by nature, and New
15 Hampshire's adopted a NOx control strategy because it
16 doesn't make sense to try to control that side of the
17 equation. So, I'm not sure where this is going but I
18 don't think it really has much relevance in this
19 proceeding.

20 Q You stated that EnergyNorth is requiring a gas cleaning
21 system. Could you explain why customers, generally,
22 would require such a cleaning system?

23 A (By Mr. Hamarich) I don't think I stated that
24 EnergyNorth is requiring a gas --

1 Q I think Mr. Haas did.

2 A (By Mr. Haas) What I stated was power developers on our
3 system have been requiring it in some locations. I
4 can't state why they want it. We've indicated to them,
5 when they've asked it, that we don't think they need it.
6 But we don't go into great discussions with them since
7 typically they're paying for the facility themselves
8 anyway.

9 Q Isn't it true that when they get a reduced delivery
10 pressure that that could result in condensate, and that
11 condensate, it freezes and also could be a safety
12 concern? Is that one of the reasons why gas producers
13 might have some concerns?

14 A (By Mr. Haas) Power generators is, I think, what you
15 meant to say.

16 Q Sorry.

17 A Typically when we interconnect with a power plant we
18 don't cut the pressure going into the plant. The newest
19 generation of the technology requires the highest
20 pressure we can give and, in some cases, they're
21 actually boosting the pressure in order to meet their
22 total requirements. So typically you won't find a
23 pressure reduction when you go from our line directly
24 into a power plant.

1 Q I think that what I was saying was, however, when there
2 is a pressure reduction, isn't it possible that if there
3 were moisture in the gas it would result in condensate
4 and that's what they're protecting against, is that
5 correct?

6 A I can't answer that question.

7 Q Let's see, somebody, I think it was you, Mr. --

8 A (By Mr. Kleinhenz) Kleinhenz.

9 Q Kleinhenz, sorry.

10 A That's alright, I still can't say it right.

11 Q Thank you. That you were testifying about the effect of
12 blasting on wells. Was that -- Are you the --

13 A (By Mr. Kleinhenz) That was Mr. Kretschmer.

14 Q Well, I think that you stepped in there for a moment but
15 you can figure out who can answer. I kind of want some
16 general information. Can you estimate the number of
17 private wells in the Town of Londonderry that would be
18 within that 200 foot range that was mentioned earlier?

19 A We have that information available. I don't have it
20 here. I don't know if --

21 Q Is it in the record?

22 A Yeah, we can make it available.

23 Q Okay. I think, yes, I think that I'd like to make that
24 request.

1 A That's actually a part of the FERC filing.

2 Q Okay. Part of the record in FERC? I just wanted to
3 sort of identify, for the record, where it is so. We
4 can probably get that in -- I'll just make a note, "Will
5 be supplied."

6 ATTORNEY M. IACOPINO: For the Committee's
7 sake, is that also in Exhibit 1 to the application, the
8 FERC filing?

9 ATTORNEY SMITH: I think it is. I'm
10 looking. I think it is in the documents.

11 ATTORNEY GOODMAN: Thank you.

12 Q Now, we talked about a pre-blast survey of wells. Would
13 that only be done on request or is that going to be done
14 for every well within the 200 foot range?

15 A (By Mr. Kleinhenz) That would be within the 200 foot
16 range.

17 Q For every well you'll do a pre-blast survey, okay.
18 Right? Is that correct?

19 A Yes.

20 Q And now, I think it was the other gentleman, I'm really,
21 Mr. Kretschmer, who said that that test that you would
22 take it's sort of a snapshot, is that correct?

23 A (By Mr. Kretschmer) Yes, it is. That would give you
24 the quality and quantity of that water on that day. I

1 just may want to add one thing here. In doing these
2 tests you have to get into the well itself and open it
3 up. The State of New Hampshire requires, I think it's,
4 I'm not exactly sure which committee but they do require
5 that any time we open these up and introduce something
6 in the well chlorination has to occur. We've got to
7 clean that well. So any contractor opening them up
8 would then be required to chlorinate them. And so, what
9 we're doing here is going into people's wells, private
10 wells, and possibly introducing something and then
11 chlorinating again. And all of the blast documentation
12 and studies have shown no problems with wells due to
13 blasting. The minimal amount and depth of the drilling
14 and blasting that will be done on this project is only
15 in the top eight to ten feet of the surface of the
16 ground. Water comes from much deeper than that. The
17 possibility of causing damages to these wells or any
18 changes in the yield or the chemical makeup of the wells
19 from the blasting, specifically, is minimal. There's
20 always a chance that deep construction cuts can turn or
21 interrupt the flow of water to a well. So the situation
22 is, from my end of it, blasting does not cause damages
23 to wells. The well monitoring, or pre-blast monitoring
24 of the wells, is a specification. It has been done for

1 years and years.

2 Q Okay, I don't want to rehash the whole technique.

3 A Okay.

4 Q Sorry to interrupt you but I just wanted to do a few
5 follow-up questions. Are you going to measure
6 turbidity?

7 A Turbidity can be one item. I haven't got the parameters
8 of what is required. A normal potability test would not
9 measure turbidity.

10 Q So, is it your testimony you're not going to measure
11 turbidity in these private wells?

12 A If potability is required then that would not be a
13 normal test for potability.

14 Q Okay, but isn't turbidity a possible problem as a result
15 of blasting?

16 A That's probably the only problem and that turbidity
17 would clear within a matter of days and then would no
18 longer be a problem.

19 Q But if you don't have a measurement of existing
20 turbidity you wouldn't know to compare, is that correct?

21 A But if it goes in a couple of days, what's the reason?

22 Q Well, I guess the problem would be if it didn't go in a
23 couple of days and someone alleged that it was the
24 reason. Okay. Now, I understand that you stated that

1 the risks are minimal that there's going to be any
2 impact on wells. But I'm trying to find out if there is
3 a dispute -- First of all, are you going to share the
4 results of this pre-blast survey with the landowners?

5 A Normally what's done is once the, what my company does
6 is, once we get the well test in that is then forwarded
7 to the homeowner.

8 Q Okay, great. And then if the landowner has some dispute
9 post construction, do you know, or someone else may
10 know, does Tennessee Gas propose a well dispute
11 resolution procedure?

12 A That would be handled as an insurance claim would.

13 Q I just want to get on the record what the procedure is
14 because you have, I assume, a large number of private
15 wells?

16 ATTORNEY SMITH: Can I just have a
17 moment? I'm being told, so I don't hold things up, that
18 that question could be directed to the water panel. If
19 it's a question of what we do about those kinds of
20 things, we could try to figure out what they would say
21 about it, right now, if you would rather do it that way?

22 CHAIR: Why don't we cover
23 this question in the next panel and move on.

24 Q Okay, next panel, we'll make a note. So the landowner

1 well dispute issue and the possible remediation process,
2 that will all be covered by the environmental panel?

3 A (By Mr. Kleinhenz) And I did want to clarify one
4 statement, and I'm reading from our -- Actually, this is
5 the ECP and this is just clarifying the pre-blast
6 survey. "If blasting would occur within 200 feet of
7 water wells they would be inspected for water quality
8 and flow characteristics both before and after blasting,
9 except in congested areas where only the nearest two or
10 three would be inspected." When I mentioned about the
11 pre-blast survey -- So that was something I need to
12 clarify because when you said there would be inspections
13 within the 200 --

14 Q Two hundred feet. You're not going 200 feet, you're
15 going --

16 A Yes, we are going the 200 feet but I need to make the
17 clarification of the "except in congested areas." If we
18 have several then we'll take random samples. Knowing we
19 have numerous water wells, we'll probably take the
20 closest few. In here it says --

21 Q Well, isn't that the case in all of the areas of the
22 Town of Londonderry where the pipeline passes through a
23 residential neighborhood? There's a number of locations
24 in the Town of Londonderry where the pipeline passes

1 through residential neighborhoods. You say you're just
2 going to randomly pick one well?

3 A No. Why don't we leave it up to water. It's more of a
4 --

5 Q Yeah, that's fine. That's fine. Let's clarify that
6 later.

7 ATTORNEY SMITH: Can I just make one
8 other point which is the question of how disputes might
9 be handled should be directed to the witness who will
10 speak about right-of-way procedures rather than the
11 environmental panel, I'm told. That's a different
12 witness coming later. Mr. Lopez will be testifying.

13 ATTORNEY GOODMAN: I'm done. Thank you.

14 CHAIR: Thank you. It's now
15 a little after 12. Why don't we take a half hour break
16 for lunch and lunch, again, is across the way in the
17 anteroom. And we'll pick up with the Neighborhood
18 Coalition. Thank you.

19 (Off the record for break)

20 ATTORNEY EDWARDS: Thank you, Chairman
21 Varney. My name, again, is Bill Edwards. Before I get
22 started I wanted to request permission that co-counsel
23 for LNC and myself be allowed to separately examine the
24 panel on different lines of questioning that will not be

1 duplicative.

2 CHAIR: Sure.

3 MR. HAMARICH: I don't think I can do
4 this alone.

5 CHAIR: Is the Applicant ready
6 for cross-examination?

7 ATTORNEY SMITH: I believe the
8 Applicant's ready, Mr. Chairman.

9 CHAIR: Thank you.

10 **CROSS-EXAMINATION OF PANEL BY ATTORNEY EDWARDS:**

11 Q Thank you. Good afternoon everyone. I'd like to start
12 on a topic that I haven't heard addressed really yet in
13 these proceedings and that is, who's going to actually
14 build the pipeline? As a general proposition to the
15 panel, would you agree with me that a pipeline is only
16 as safe as the contractor who builds it?

17 A (By Mr. Hamarich) No, I would not agree to that
18 statement.

19 Q Why is that?

20 A There's a combination of things. It's the construction
21 -- As I've testified before, it's construction
22 specifications. It's adherence to those specifications
23 during construction. It's the inspection of that
24 installation. It's the material that's used. And then

1 a very important part of that, and an integral part, is
2 the contractor and their qualifications. So, the
3 contractor's important but by no means the only
4 important factor in installing a safe pipeline.

5 Q Okay, I can accept that. But would you agree with me
6 that the pipeline is only as safe as the contractor who
7 builds it? And when I say that I mean if a contractor
8 builds it defectively than it's only as safe as the
9 contractor builds it? There is the potential for a weak
10 link. That's what I'm getting at.

11 A The -- I'm sorry.

12 Q Go ahead.

13 A No, you go ahead. The question again? I'm sorry.

14 Q Do you agree that the pipeline is only as safe as the
15 contractor who's building it? I realize that there are
16 other factors that affect the safety and contribute to
17 the overall safety of the pipeline, no doubt.

18 ATTORNEY SMITH: I think the witness
19 just answered that question.

20 ATTORNEY EDWARDS: Alright, I'll move on.

21 Q Mr. Hamarich, has the contract been awarded?

22 A No, it has not.

23 Q Has equipment been mobilized yet?

24 A No, it has not.

1 Q There's no equipment that's been mobilized to
2 Londonderry?

3 A Not associated with this project, no.

4 Q Who is Tennessee currently negotiating with to build the
5 pipeline?

6 A Tennessee's not negotiating with anybody. We've worked
7 with three or four contractors in looking at it, helping
8 us with construction practices, but we've not begun
9 negotiations or a bidding process for construction of
10 this pipeline.

11 Q Can you provide the names of any contractors who you are
12 considering?

13 A At this time I can't say specifically. It's something
14 that -- Internally we go through a process to try to
15 develop a competent bidders' list based on this type of
16 project, so it would be premature for me to say any
17 constructors in particular at this time.

18 Q Fair enough. Is Delta Gulf one of the contractors that
19 will be considered?

20 A I would say, based on their presence in the region and
21 past projects, they would be considered as a possible
22 bidder on this project.

23 Q Are you familiar with Delta Gulf's safety history in New
24 Hampshire?

1 A I'm not specifically. I know that they've been
2 qualified to work on and bid on projects for us in the
3 past. And, in fact, this year they worked on projects
4 for us on our system, not in New Hampshire I don't
5 think. Well, in fact, some in New Hampshire even, yes.

6 Q Would you consider the safety history of Delta Gulf, or
7 whomever builds the pipeline, important?

8 A Yes.

9 Q Are you familiar with the PNGTS-Maritimes project?

10 A From an onlooker, yes, I am.

11 Q How was, if at all, El Paso involved in that project?

12 A Early on, prior to, El Paso was providing engineering
13 services under the guise of Tenneco Services at the
14 early development of that project. Our engineering
15 group provided third party services, much as a
16 consultant. It was a consortium, PNGTS. El Paso Energy
17 provided engineering services to that process and also
18 El Paso Energy was an investor in that project, as was
19 a partner in that project, I understand.

20 Q What investigations, if any, will Tennessee Gas
21 undertake to review the safety history of whomever
22 builds the pipeline?

23 A Tennessee Gas has a strict compliance form of
24 contractors and we look at their safety records in

1 regards to incidents from personal incidents safety
2 records, and they have to meet certain criteria to
3 become bidders on the project. We have a list of
4 qualified contractors for projects such as this.

5 Q Do you review their specific OSHA violations?

6 A That, I believe, is part of the consideration. I'm not
7 in direct involvement of the reviewing of those but our
8 materials and contract management is part of that. Our
9 materials and contract management team manages that part
10 of the process.

11 Q Are you aware of the details, not even the details, are
12 you aware that Delta Gulf was cited for numerous
13 violations by OSHA on the PNGTS project?

14 A My understanding was that -- I've heard that they were,
15 yes.

16 Q Is that something that Tennessee will investigate prior
17 to awarding to Delta Gulf if Delta Gulf is used on this
18 project?

19 A Tennessee, I don't know if we'll investigate. I can say
20 that Tennessee has used Delta Gulf and believes Delta
21 Gulf is a high quality pipeline contractor. And, in
22 fact, Tennessee has used Delta Gulf this past year on
23 projects, and very successful projects.

24 Q Okay, fair enough. I'd like to move on a little bit,

1 then, to some causes of failures that have been
2 addressed pretty exhaustively, but I have a few specific
3 questions on that. You mentioned that third parties is
4 the number one cause of pipeline failures, is that
5 right?

6 A Yes, according to these statistics that are published.

7 Q In the construction of this pipeline, then, would you
8 consider Delta Gulf, or whomever builds it, a third
9 party with respect to the existing 12 inch line?

10 A It's -- They're a third party in the sense that they're
11 contracted by Tennessee Gas Pipeline. But they're a
12 third party that I want to separate it from another
13 third party contractor that may be working on or near
14 the pipeline in that Tennessee Gas will have direct
15 control and inspection oversight of the, I say control,
16 inspection control and quality control, over the
17 contractor that's contracted to construct this project.
18 But, yes, in the true sense of the word, any contractor
19 working there would be considered a third party
20 contractor.

21 Q And so, they would enjoy that status for the entire
22 length of the pipeline because they'll be working
23 adjacent to the 12 inch line for the length of the
24 project?

1 A Yes, they would.

2 Q Could you give me an example of a typical third party
3 accident on a pipeline project?

4 A I -- These third party accidents, I want to separate,
5 these are incidences normally where third parties -- And
6 by definition, normally third parties not related to the
7 pipeline construction such as water lines, housing
8 projects, telecommunications line. And so, I can't say
9 of any incidences where Tennessee has had any
10 construction contractors building near pipelines causing
11 any incidents because of the control methods and
12 inspection we have in place to protect our system on
13 that.

14 Q Well, I don't need an example of a contractor who was
15 working for you, another pipeline? Just give me a
16 flavor of the type of accident that can occur as a
17 result of a third party contractor working near an
18 existing line, for example, during excavation? I assume
19 they can break the pipeline during excavation?

20 A For example -- And again, I want to limit this. We're
21 talking, basically, natural gas transmission systems
22 here and not distribution, because some of the
23 distribution systems are in streets and have other
24 operating conditions, so just as a natural gas

1 transmission system. And as we're working here, that's
2 a theoretical question but theoretically, we go to the
3 protocol we have in place to construct near high
4 pressure transmission lines. We'd protect against those
5 incidences. Number one, we would mark the location of
6 the existing 12 inch line and know where it's located at
7 all times. As we testified earlier, there are instances
8 where we not only use electronic location, we physically
9 would trench and observe that pipeline. So, we know
10 where that pipeline is. If we were to work across
11 underneath that pipeline, we would have to expose that
12 pipeline with excavating material, excavating the
13 material off the pipeline. When we get so close to the
14 pipeline we have to use hand digging.

15 As we testified earlier, when we blast near that
16 pipeline, we have strict blasting procedures against
17 that pipeline. So, all of those procedures would
18 prevent any type of possible incident from occurring
19 during the construction near the pipeline.

20 Q Would you agree it's pretty critical to ensure the
21 protection of the existing 12 inch line during the
22 construction of the 20 inch?

23 A Yes, it is very critical to protect that and it is part
24 of our program to do that.

1 Q And the oversight of the contractor who builds it is
2 going to be, likewise, critical?

3 A Yes, it will be.

4 Q Let's talk a little bit about corrosion, another thing
5 that's been addressed at length. And I appreciate the
6 reluctance to speculate on the New Mexico incident, and
7 I'm not going to ask you to speculate on that project.
8 I would just like you to assume for a second, though, if
9 corrosion was the cause of that accident, how could it
10 have been both detected and prevented?

11 A The methods that we've talked about in preventing
12 corrosion start with the initial installation of a
13 pipeline. One factor we talked about, external. One
14 factor, internal corrosion. External corrosion, to
15 prevent that type of corrosion we would install the
16 pipeline with good protective coating that is bonded to
17 the pipe so that when it's installed, and the proper
18 soil is placed around it, it has a good bedding. And
19 then we would protect that with cathodic protection to
20 assure that there isn't any metal loss externally due to
21 corrosion. And we would protect that and we would
22 monitor those cathodic surveys. So from an external
23 process, that would be the methods to assure that
24 external corrosion was not allowed on the pipeline.

1 For the internal corrosion, as discussed, we've
2 testified that we've not had any incidents or any
3 history of internal corrosion of this pipeline, no
4 failures due to internal corrosion, and that we operate
5 a system with dry gas. And therefore, we expect that
6 same type of system once the 20 inch pipeline's
7 installed.

8 Q Are there any plans to inspect the existing eight inch
9 line as it's demoed for any signs of internal corrosion?

10 A Yes. In fact, according to our regulations or operating
11 mandate, any time a piece of pipe is removed it's
12 inspected both externally and internally for all
13 defects, whether it be -- The forms that are used --
14 There's forms that the pipe has to be observed and it
15 has to be documented, and those become part of the
16 permanent records. So every piece of pipe that comes
17 out of this pipeline will be visually inspected as far
18 as external coating conditions, anything along the
19 pipeline that may look as a defect, and that will be
20 documented as part of the records.

21 Q In terms of the dry gas that's been discussed, the
22 pipeline quality gas that you anticipate to be running
23 through the new line, explain for me, I know it's been
24 discussed but what is the source of the gas?

1 A The source of this gas is a combination. As Rob
2 testified, Rob Haas testified yesterday, Tennessee has
3 four or five ways that the gas can enter the system. It
4 can enter the system in Dracut, Massachusetts, which is
5 just two or 300 feet south of the beginning of this
6 pipeline. And the source of that gas is offshore, I
7 believe it's Sable Island gas, coming in on the Maritime
8 system, and then Western Canadian Supply that comes
9 through TransCanada and down through northern New
10 Hampshire into the Portland project.

11 We also have gas that enters our system right in
12 New York and down in Connecticut that comes through
13 Iroquois system, that's also Western Canadian Supply,
14 and then through the Niagra import location. And then
15 the remaining gas comes up our traditional gas supplies
16 up a trunk line from the Gulf Coast of Louisiana,
17 Alabama, Texas and the production areas in Texas.

18 Q Okay.

19 A That's the primary source. And then, there is
20 capabilities to bring source in from Canada, which is
21 also Western Gas, through Chicago. So, all the major
22 basins and supplies in the U.S., there eventually could
23 be that type of gas.

24 Q So, why is it that dry gas is expected here in and yet

1 it's a concern in other areas of the country?

2 A It's expected here and, as we testified, it's downstream
3 of these production areas where you're more likely to
4 bring in the liquids and the impurities in the line.
5 There's facilities installed in these systems to knock
6 out the majority of that type of impurity and liquid.
7 And then, as the system gets further and further away
8 from the production, each of the compressor stations are
9 designed with certain filter separations should, mainly,
10 a lot of its, mainly, if there's an upset in the system.
11 As someone testified earlier, if for some reason there's
12 an upset in the system and there's a failure somewhere
13 on another company to meet their gas requirements, then
14 we've got that protection. It's not before it reaches
15 our compressor units. And we want to protect those
16 compressor units from any upset in the liquids. Well,
17 by the time it goes through all these checks and
18 balances, and reaches this part of the country, there's
19 none of those impurities or none of that liquids are
20 left. And that's been our operating history and our
21 expectation as we move on on these systems.

22 Q So the further the gas travels through a transmission
23 line the more opportunity it has to become drier?

24 A That's one -- And yeah, I don't want to indicate that

1 the gas coming in the transmission system further down
2 is not dry because there's strict standards at that
3 point when it enters the system.

4 Q Okay. Counsel for the public got into a line of
5 questions about the so-called "dead spots" in a line
6 that can sometimes cause moisture to accumulate and lead
7 to internal corrosion?

8 A Yes, I believe they did.

9 Q I don't recall what Tennessee's position was as to
10 whether or not this line has been specifically designed
11 to prevent the accumulation of moisture in dead spots?

12 A This line does not have many of the areas that one might
13 find as considered dead spots in that there is no header
14 systems where gas would accumulate and not be in a flow
15 condition. The gas enters the system in Dracut,
16 Massachusetts. It's a continual flow until it leaves
17 the meter stations. And once it leaves those meter
18 stations it flows to the customer, and it's a constant
19 flow-type parameter. It's not in a system where there's
20 low flow or there's isolated areas. So, for the most
21 part, it is designed to prevent something like those low
22 flow areas. But I could not testify to say that, under
23 certain circumstances, if there were liquids in there,
24 that that may not be the case.

1 Q Is it possible to design a pipeline to minimize the dead
2 spots?

3 A It is possible to design a pipeline to minimize dead
4 spots and it is manners to operate a pipeline to move
5 the gas through should there be any reason for it to
6 accumulate. So there are design protocol along pipeline
7 systems to handle those situations.

8 Q So, basically what you're saying is, in a gas line where
9 there's such a high flow rate anticipated there's less
10 of a chance for any moisture to accumulate in any dead
11 spots that there may be because of the high flow of the
12 gas?

13 A As we said yesterday, that's one of the factors, it has
14 to be -- The flow has to be able to take it along the
15 pipeline. But again, we're getting back to this
16 pipeline has no history of, or no anticipation of,
17 liquids entering the system because of the way the gas
18 is filtered prior to getting here and the way the gas is
19 monitored on a daily basis as to what the parameters
20 are, and that we can control that gas quality. Should
21 there be an upset in the system, it would be expected to
22 be a very short upset. And that would not create any
23 imminent situation for corrosion, internal corrosion, to
24 occur.

1 Q So there are controls in place here, and variables in
2 place here, that were not in place in New Mexico?

3 A This is a completely different system, a completely
4 different operation than the transmission pipeline in
5 New Mexico.

6 Q Do you know yet who the manufacturer of the pipe will
7 be?

8 A No, I don't, but I can testify that the pipe was sent
9 to, I believe, five mills about three weeks ago. We
10 have quotes as to who those mills would be. There's
11 several pipe mills in the world and we've got, again,
12 just like our contractors, we've got mills that meet our
13 quality standards. But I can't tell you, right now,
14 which ones those are.

15 Q I'd like to talk, a little bit, about the coating on the
16 pipe. You mentioned that it's applied in the shop and
17 the pipe is heated up to some 450 degrees and then
18 applied in the shop. And then explain to me how in the
19 field, though, it is reapplied, for example, over the
20 welds or in areas where it needs to be touched up from
21 damage during unloading or it was nicked by the
22 excavator, or something of that sort?

23 A Okay. In the field, the pipe's coated at the mill and
24 put on a truck. It's tested, everything's tested, so

1 when it leaves the mill any kind of damage that was
2 caused during the manufacturing process is repaired.
3 It's placed on either a truck or a rail, shipped to the
4 job, unloaded at the pipe yard. The contractor picks it
5 up, brings it out to the pipe. We have strict handling
6 procedures the entire way of what you can put around the
7 pipe, how you can handle it, to minimize any damage to
8 the pipe.

9 Once the pipe is welded, there's a process where
10 the pipe, again, is heated to that same temperature.
11 There's like an electrical generator out there. The
12 contractor heats that, after it's welded and
13 sandblasted, to the same specifications as at the mill.
14 So it's the same process but done in the field. And the
15 pipe is heated and then the powder is sprayed on the
16 pipe and then you have one continuous coated pipeline.

17
18 In regards to any damages, a device called a
19 "holiday detector," which is basically a wire with
20 electronic, is run through along the pipe prior to the
21 pipe being placed in the ditch, and should any -- What
22 it will do is detect any -- You can set it, and it
23 depends how you set it. You can detect any thinness in
24 coating. It will burn through the coating if we have

1 insufficient coating, and that's what you'd call a
2 "holiday." And then there's materials where you patch
3 that holiday and you place it in the ground. And that's
4 the process to get this 100 percent coated line,
5 starting in the factory through installation.

6 Q So the contractors in the field are able to heat the
7 pipe up to the requisite 400 or 450?

8 A Yes, they are.

9 Q Quick question on cathodic protection. In what ways, or
10 what manners, could a cathodic protection system fail?

11 A The primary way would be if the electricity to it was
12 cut off because it has to keep that constant DC current
13 if it's an electrical cathodic system, if it's with
14 electricity. There's some cathodic systems where it's
15 just anodes that are put in the ground, sacrificial
16 anodes, we do that offshore, we won't do that here,
17 where you can't get the electrical current. So you have
18 to define those for the life of the project and define
19 that life before you have to come in and replace it.
20 But on something like this, one failure would be
21 electricity not to be working. Another failure would
22 be, again, the third party damage, if someone got into
23 the pipeline and the cathodic bed and damaged it. But
24 these are checked on regular intervals, these

1 rectifiers, to assure that they're working and that any
2 repairs are made. So if something went out of service
3 it would be within the three or four week period when
4 these are checked, and it wouldn't be long enough. This
5 is a long-term protection. It wouldn't be long enough.
6 So that would be the basic failure modes.

7 Q So the most it could be down would be for a few weeks
8 until the next inspection --

9 A The next inspection.

10 Q Which is not enough of a factor to be of concern for
11 potential corrosion?

12 A Exactly, and there's -- Yes.

13 Q Okay, question on training. How is Tennessee going to
14 go about training the schools and the teachers and the
15 administration surrounding the pipeline?

16 A I think what you're getting at is the training of the
17 schools, what Tennessee does, and the discussion
18 yesterday about our emergency response plans and our
19 emergency programs. What the premise is on that is
20 Tennessee develops this plan as to what has to be done
21 in the case of an emergency associated with the pipeline
22 operations. Tennessee works with the emergency
23 response, fire, police, ambulance, through meetings and
24 education, communicates with those in the town. Then,

1 the way the plan is there is, the towns, the town
2 implements that as to how they handle an emergency
3 within that town. So we don't get into the depth of
4 training schools, training teachers, training directly.
5 We do send out brochures that give the basics of natural
6 gas pipelines and the safety to try to educate, but we
7 don't train, per se, those people as to how to do their
8 job. We don't even train the fire on how to do their
9 job. We try to work with them and communicate as to
10 "Here's our pipeline. Here's our corridor. Here's
11 where our valves are. Should there be an emergency,
12 natural gas, should it ignite, you're not going to be
13 able to put it out with your equipment. Isolate the
14 people." And then Tennessee will isolate that valve and
15 get in there and investigate the cause, mainly to
16 traffic control and things like that but. It's more
17 like an emergency response to any other issue. We
18 don't, as a company, go into that level of -- We feel
19 it's better for the local communities to do that. And
20 again, with this pipeline, since it's been here for a
21 long time, these communities are aware of the location
22 of this pipeline.

23 Q So there's no real annual revisits to the local
24 communities, or anything like that, to discuss the

1 general safety issues associated with the pipeline?

2 A Yes, there's -- One of our emergency preparedness -- Our
3 operating area comes to the different communities once
4 a year and puts on a program to update them, a public
5 awareness we call it, to bring everybody up to speed as
6 to what's going on on the system. We discuss some of
7 our latest projects and just to reemphasize these whole
8 safety programs. I believe last year we had one in
9 Manchester -- I was out talking to our operations
10 people. We had one in Manchester. Some of the
11 communities chose not to attend that but they're all
12 invited. And that's one of the ways we do it.

13 The other way is by annual mailings of information
14 packets that explain certain things, and all landowners
15 and affected public and emergency response people get
16 those.

17 Q One thing I forgot to ask back when I was talking about
18 coating, the pipe coating, do you plan to backfill rock
19 in the trench, blasted rock?

20 A No, we do not.

21 Q Because I do recall reading in the filings that it is
22 permissible to do so.

23 A I believe there's a limit of maybe, and I can't quote
24 it, two inches or something, control backfill, that's

1 coating. It's only rock to the level that will not
2 damage the coating. In other words, acceptable backfill
3 is rock up to a certain size. Primarily it's sifted
4 soil, gravel, sand, things like that. But when we talk
5 about rock in New England, you may have pieces of rock.
6 I'm not saying it's going to be totally rock free and
7 that that does any harm to this type of coating. What
8 we don't have is rocks larger than a certain size. We
9 don't have boulders that will dent the pipeline. We
10 don't have sharp things that will damage the coating.

11 Q What will be done with those rocks that are too large
12 for being backfilled?

13 A They'll either be placed in the sides of the ditch,
14 because the ditch will be wider, or they'll be placed on
15 top of the padding and worked into cuts, but they're not
16 going to be sitting against the pipeline. I believe our
17 new specifications call for an eight inch buffer before
18 any type of rock are there and we try to get them in.
19 We work through the local areas sometimes, rock has to
20 just be worked into the area, but the pipe is protected
21 from any large rocks and boulders. And even on top of
22 the pipe directly, so if we have to come in for
23 maintenance, we'll allow larger rocks but we're not
24 going to allow these New Hampshire size boulders sitting

1 on top of the pipe.

2 Q On the topic of rock, I have a few questions as it
3 relates to blasting. So, Mr. Kretschmer, you might want
4 to address this. There was a lot of discussion about
5 the forces or the ground vibration limitations that are
6 established here. And there's the four inches per
7 second, which is the self-imposed standard here, but no
8 one asked you what effect subsurface rock or ledge would
9 have on this standard and the resultant force or impact
10 rock blasting could have on an adjacent structure or
11 pipeline?

12 A (By Mr. Kretschmer) The four inch per second vibration
13 limitation does, in fact, take that into consideration.
14 That's a surface wave movement that we're measuring and
15 monitoring. It goes down the ledge the same as it's
16 going to go anyplace else. Once it gets out a certain
17 distance away from the blast area it becomes elastic,
18 nondeforming, and it can't possibly break rock further
19 away. So the elastic movement that we're measuring at
20 the pipeline, to a certain extent -- I don't understand
21 your question other than the fact that it's not going to
22 move any more rock.

23 Q Well, my concern isn't that it's going to move my rock.
24 My concern is an explosion in an area with solid rock is

1 going to transfer a much greater force than an explosion
2 in an area with pure soil. Is that a true statement?

3 A No.

4 Q I'd like to pose the same question to one of the
5 engineers on the job. Let me rephrase it. Is there not
6 the potential for a greater force to be generated on an
7 adjacent structure or pipeline if there is solid rock or
8 ledge in between the location of the blast and the
9 adjacent structure or pipeline? Do you understand my
10 question?

11 A (By Mr. Hamarich) I agree with Dutch's answer and I'll
12 clarify it, if I understand it right. If there's soil
13 there we're not going to be blasting but I think that's
14 right in a ditch. So the way the blast is set up as
15 vibrations, it's measured through the -- There's four
16 parts to calculate. Whether it's through the soil or
17 through the rock, that's where it's measured. I think
18 that's what he's getting at, when it's down in the hole
19 and there's a charge, how's it going to go through the
20 soil? If it's ledge, if a house over here is sitting on
21 ledge, does it have one affect or if the house is over
22 sitting on soil does it have another affect?

23 Q That is what I'm getting at. For example, you're
24 blasting the ditch and there happens to be solid rock

1 from there until the adjacent 12 inch line, for example?

2 A (By Mr. Kretschmer) Any time you design a blast you
3 design a blast to blast free face, which takes all the
4 energy of the blast and directs it towards that free
5 face and eliminates the vibration and the block movement
6 behind and adjacent to.

7 MS. BROCKWAY: What's a free face?

8 A A free face would be a face that hasn't got anything
9 else in front of it. If you just drill a hole in a rock
10 and place some explosive in there, the free face is up,
11 okay, because there's nothing holding it that way. If
12 you drill it in a trench and one end is free, you shoot
13 it in that direction, that is the free face. So that's
14 the way -- And blasting can be set up to be shot that
15 way towards the free face. That's what you always want
16 to do. That would reduce your vibrations. And the
17 vibrations going through rock and soil does, in fact,
18 change them. In rock you'll maintain a very high
19 frequency, whereas in soils it may change and go to a
20 lower frequency. And that's what we've done in 8507 is
21 accepted the fact that lower frequencies require lower
22 peak particle velocity. So -- And, again, you're -- I
23 think you're referencing the fact of possible ground
24 heave, and I think we've discussed that at length

1 earlier.

2 Q Yes, I understand the ground heave issue. I'm getting
3 at something different, though, what I would expect to
4 be a higher transfer of force to an adjacent structure
5 if there were solid ledge in between the blast and the
6 structure.

7 A (By Mr. Hamarich) Is your concern the ledge, a resident
8 or the pipeline?

9 Q Well, both, and I want to know what --

10 A That's why we do the monitoring at those, both
11 locations.

12 A (By Mr. Kretschmer) Right, and that's why we've agreed
13 to limit the vibrations at those structures and at that
14 pipeline.

15 A (By Mr. Hamarich) It's such a small, conservative
16 factor.

17 Q On the 200 foot versus the 300 foot radius issue, there
18 was an analogy to the resultant force that a landowner
19 would feel might be comparable to someone walking across
20 the house if they were, say, 200 feet to 300 feet away?

21 A (By Mr. Kretschmer) Yes.

22 Q Are you willing to say that any landowner that is over
23 200 feet away is going to experience nothing more than
24 a mere footstep across their floor?

1 A I can't tell you what they will experience. What I can
2 tell you is the measurements will be something akin to
3 that. The experience of people, especially around
4 blasting and any type of vibration, can range from no
5 experience at all, which that's no problem, to that's
6 intolerable. And that's why there's seismographs. The
7 seismographs that you place out are independent third
8 parties. If they're set up correctly, and they are
9 quite easy to set up, they will measure what they
10 measure. And those vibrations can be associated to
11 other everyday activities. But as to what people
12 actually will feel, and emotionally will feel, I can't
13 say that.

14 Q What landowners are going to be contacted on pre-blast?
15 Are you going to stick to the 200 foot standard for
16 contacting landowners prior to blasting?

17 A (By Mr. Hamarich) We'd like to, our other panel on
18 right-of-way, we'd like to defer to that or we could
19 introduce somebody here.

20 Q I can hold off. If the right-of-way witness is prepared
21 to talk about that, that's fine. One last question, and
22 this stems from something that Attorney Smith said
23 during his opening. Mr. Hamarich, do you agree with
24 Attorney Smith's statement that this new pipeline poses

1 no increase in risk for the public?

2 A (By Mr. Hamarich) Yes, I do.

3 Q Is that how Tennessee is going to approach its safety
4 and construction responsibilities as if there's no
5 increase in risk to the public?

6 A The approach would be consistent with the way we're
7 currently operating the existing system and in adherence
8 with the current way we are constructing our pipelines
9 on our system. And, therefore, --

10 Q So you perceive this whole project to pose no increased
11 risk, no increase in risk? There's no risk associated
12 with the construction of a new 20 inch natural gas line
13 next to an existing 12 inch live line?

14 A No adverse increase in risk associated with this
15 project.

16 ATTORNEY EDWARDS: That's fine. I have
17 no more questions.

18 ATTORNEY ROCHWARG: Good afternoon panel.

19 **CROSS-EXAMINATION OF PANEL BY ATTORNEY ROCHWARG:**

20 Q Isn't it true that a release of natural gas potentially
21 will increase environmental pollution?

22 A (By Mr. Hamarich) I believe we had some testimony
23 earlier that it's methane, and there was some discussion
24 about it possibly harming the ozone layer. What was

1 said, I can't speculate or -- I can't speculate. I'm
2 not an environmentalist, per se, on that so I believe
3 some of those statements had some truth to them when it
4 is released.

5 Q Would you agree that such a release would adversely
6 affect the local quality of life in Londonderry were it
7 to happen?

8 A No, I would not. And, in fact, through the operation of
9 our pipeline over the 50 years in New Hampshire and
10 Londonderry, as part of our maintenance programs we've,
11 on occasion, released natural gas into the atmosphere in
12 both Londonderry and in other towns in New Hampshire as
13 part of our routine maintenance. That is how we get the
14 gas out of the system before we do any maintenance on
15 the project. And, in fact, we will isolate the gas from
16 the eight inch line on this project prior to removing
17 it.

18 Q So you disagree that it would adversely affect the local
19 quality of life, correct?

20 A Yes, I do.

21 Q And what if it was released in a non-controlled natural
22 gas release? In other words, for example, methane gas
23 is carried along these pipes and it has the potential to
24 create enormous fireball explosions, correct?

1 A The uncontrolled release of natural gas, the scenarios
2 I'm thinking of here is a possible leak on the system
3 which, again, natural gas could be released into the
4 environment. Because of the properties of natural gas it
5 will dissipate into the atmosphere, unless it is in an
6 area where the only risk there is if there's an area
7 where it could be prevented being released in the
8 atmosphere. And another uncontrolled situation would be
9 a rupture where the steel, for some reason, many of the
10 reasons we talked about, could not hold the pressure and
11 there would be a sudden release of energy and natural
12 gas to the atmosphere at that time.

13 Q And my question was, wouldn't you agree that methane gas
14 can create, has the potential to create, enormous
15 fireball explosions such as in Carlsbad, New Mexico?

16 A And when the gas is released, it's not necessarily an
17 explosion. Again, if it ruptures, that's that sudden
18 release of energy. Not all ruptures explode into a
19 fireball, which is a chemical explosion that requires
20 some kind of ignition source. That is not the case in
21 every failure of a pipeline.

22 Q Is it possible that the methane gas that's carried in
23 these very same pipes that you propose to build could
24 result in an enormous fireball explosion?

1 A I guess I will have to just answer, if you phrase it
2 that way, anything's a possibility.

3 Q Would you agree that the construction of the pipeline
4 through the Town of Londonderry has the potential to
5 adversely affect property values?

6 A I cannot say that for a fact. In fact, I can almost, to
7 the contrary, say that since the development along our
8 pipeline has been so great, and there's some lovely
9 properties and homes along the route and in the area,
10 that I have not seen any evidence of that through the
11 past development along our existing corridor. So I have
12 no reason to believe that they will have any impact with
13 the new pipeline being there in that same corridor.

14 Q And I assume your response would be the same for the
15 saleability of those properties?

16 A Yes.

17 Q How much natural gas is being pumped through the
18 pipeline, the new pipeline, the new proposed pipeline,
19 do you propose to pump through that line, that is going
20 to be for current local usage, that is, at the
21 completion of the construction of the pipeline?

22 A I believe Rob testified yesterday there's like 60, Rob,
23 you can correct me, 60 dekatherms a day is currently
24 serving New Hampshire, and that will be the same after

1 the construction. Is that correct, Rob?

2 ATTORNEY SMITH: He's not here.

3 A He's not here? Sixty dekatherms.

4 Q The pipes on the 12 inch, or the length of pipeline in
5 the existing 12 inch pipeline, they're approximately how
6 old?

7 A The pipe on the 12 inch starting in Dracut,
8 Massachusetts and then into New Hampshire, the oldest
9 segment is approximately 20 years old, the youngest
10 segment is approximately ten or 11 years old.

11 Q And these pipes are known to corrode over time, correct?

12 A Not necessarily. If the pipe is properly coated and
13 installed, as we've discussed, and cathodic protection
14 is maintained, they're not necessarily subject to
15 corrosion.

16 Q However, I think you previously testified that the
17 existing 12 inch line hasn't been safety tested in
18 years, correct?

19 A The original 12 inch line was safety tested when it was
20 installed in a manner of a hydrostatic test, which is a
21 strength test. It was not further tested in regards to
22 pigging, but that is no indication, that does not
23 indicate that there is corrosion on the pipeline.

24 Q Do you know approximately when, and you may have

1 answered this and I just don't recall, when the
2 approximate last date of testing on that 12 inch pipe
3 was?

4 A Can I ask what type of testing, specifically?

5 Q Testing for any corrosion, internal or external.

6 A As I said, I did not give any exact dates on that.
7 Through regular maintenance if the pipeline is cut, for
8 any reason, and inspected internally for maintenance
9 reasons, I'm not sure if any of that has been done on
10 that pipeline, the 12 inch. As far as other
11 maintenance, there is monthly and quarterly cathodic
12 protections on that system. We're monitoring and
13 installing ground beds. In fact, that's additional
14 cathodic units. There were some projects that were
15 completed this year on that so it's been inspected that
16 way. And it's also, as I testified, been patrolled both
17 on the ground and by helicopters.

18 Q Would you agree that the National Transportation Safety
19 Board has found that explosions have actually occurred
20 in situations where there's evidence of corrosion,
21 internal, in the pipes?

22 A I'm sorry, could you repeat the question?

23 Q Would you agree that there have been instances where
24 investigation has revealed that explosions have been

1 caused by or contributed to by old corrosion, or
2 corrosion, rather, in older pipes?

3 A I personally cannot say that I agree with that statement
4 because I don't know the history of every incident or
5 every explosion.

6 Q Are you familiar with any incident where that's been the
7 case, personally?

8 A Personally, no.

9 Q Are you familiar with a material by the name of
10 mercaptan?

11 A Yes, I am.

12 Q What's the purpose of mercaptan?

13 A Mercaptan's the chemical odorant that's added to the
14 gas. That's what you smell. Natural gas has no smell.
15 The mercaptan is added to add odor to the gas.

16 Q And, can you --

17 A I'm ignoring him, don't worry.

18 Q I didn't hear what he said. I didn't know if he had
19 something to offer. Can you tell the members of the
20 Committee whether, in fact, the release of mercaptan has
21 any health consequences in your opinion, if you know?

22 A I do not know that. I cannot say. But I think that's
23 a question possibly for my environmental scientist that
24 may be able to follow up on that in regards to air

1 quality and whatnot.

2 Q Now, I know that you previously testified that you do
3 not agree that running the pipeline through the Town of
4 Londonderry would affect the quality of life or
5 adversely affect the citizens' property values. Would
6 you want a pipeline running through your backyard?

7 A I've never been faced with that opportunity to have a
8 pipeline in my backyard. I've never owned property on
9 a pipeline or had a pipeline there.

10 Q And that would be by choice, I assume?

11 A Yeah. Ask Eric, he's had four so. But, seriously, no,
12 I've not had that. Unfortunately, I live in the heart
13 of Houston.

14 Q Let's talk a little bit about, hypothetically, should an
15 explosion occur as the one in Carlsbad, it's true, isn't
16 it, that the heat of such an explosion can become so
17 intense that in Carlsbad, for example, there was
18 evidence that the sand melted into glass and concrete
19 virtually turned into powder?

20 A I cannot say "Yes" or "No" on that. I understand that
21 has been, information like that has been, released in
22 the press or on the OPS Web pages so.

23 Q And that would be the Office of Pipeline Safety?

24 A Office of Pipeline Safety, yes.

1 Q And that's the department that is responsible for
2 overseeing and inspecting and determining whether you're
3 in compliance with regulations?

4 A Yes, Ma'am.

5 Q The pipeline in New Mexico was installed approximately
6 in 1950 and had been checked less than three weeks
7 before the explosion, isn't that accurate?

8 A I'm not sure about that. I believe something was
9 published like that but I don't know what they mean by
10 'checked'.

11 Q Inspected, determined to be of good integrity.

12 A I think that's right off the web page but I don't know
13 what is meant by that.

14 Q So none of that has ever come up in conversations? In
15 considering safety in this proposed pipeline, you
16 haven't discussed any of the potential dangers and
17 preventative or prophylactic measures that might be
18 taken in this particular project to avoid something, a
19 similar occurrence in New Mexico?

20 A Yes. In fact, the entire project was designed to assure
21 no adverse impact to public health and safety. When we
22 applied with FERC on this project in November of 1999,
23 and when we applied for application before EFSEC on
24 February 11th, we had a pipeline system design that's

1 built in all the safety factors and features to assure
2 that we have a pipeline system that's both constructed
3 and operated, and continue to operate in New Hampshire,
4 in a method to protect the public and the interests of
5 New Hampshire. In fact, after the Carlsbad -- There was
6 nothing redesigned, reconsidered on this pipeline after
7 the Carlsbad incident on this pipeline because
8 everything that we were doing in proposing for this
9 pipeline had these so-called "features" to minimize and
10 protect the public health and safety on a pipeline
11 system such as this. And so, we're just reinforcing
12 those issues here in our testimony today.

13 Q Are you aware of the statistics on fatalities as a
14 consequence of pipeline accidents?

15 A I've heard statistics. I've heard that, from a
16 transportation standpoint, we quote a statistic that
17 it's one one hundredth of a percent of all deaths due to
18 transportation incidents resulted in incidents involving
19 transportation pipelines. And it's had, historically,
20 a very, very good safety record.

21 Q Let me be more specific. The General Accounting Office
22 has come out with a report that an average of 22 people
23 died annually between 1988 and 1999, 1998, excuse me, in
24 pipeline accidents?

1 ATTORNEY SMITH: Excuse me, do you have
2 that report?

3 ATTORNEY ROCHWARG: No, I'm asking him if
4 he knows that.

5 A No, I'm not aware of those statistics per se. And I
6 just do want to clarify to make sure it's transmission
7 pipelines and not distribution pipelines, and there is
8 a difference. There's a significant difference in the
9 type of operation and locale and incident-type
10 situations between transmissions. And statistically,
11 most of the incidents and resulting deaths are on gas
12 distribution systems versus transmission systems, and
13 that's just inherent to the locale of where they're
14 located and exposure to third party instances.

15 Q So if the General Accounting Office report stated that
16 the overall number of pipeline accidents involving
17 natural gas, and other hazardous materials, increased
18 four percent per year between 1989 and '98 --

19 ATTORNEY SMITH: I'd like to object to
20 this type of question. This is the second one. Unless
21 counsel thinks that they can testify to this, I don't --
22 We don't have the report. There are many reports.
23 We've tried to look for reports to react to the issues
24 that have been raised here, and we may be able to find

1 some of them before this hearing is over. It's very
2 difficult to have my witnesses to try to respond to
3 reports we haven't seen. I'm sure they don't have them
4 all committed to memory. There are important
5 distinctions that relate to these kinds of things, such
6 as what Mr. Hamarich just said. Most of the accidents
7 are on local distribution companies' lines and not on
8 these type of pipelines. I think, otherwise, there is
9 a great potential that this information will be
10 misunderstood.

11 So if you have reports that we could look at, we'd
12 be glad to try to react to those. And if you don't, I'd
13 object to asking the witness to try to comment on these
14 things which he hasn't seen.

15 CHAIR: Yes. Generally, we
16 would ask that you have a copy of the report that you
17 would then share with the panelists.

18 ATTORNEY ROCHWARG: That's fine.

19 CHAIR: Thank you.

20 ATTORNEY ROCHWARG: What I would propose
21 to do then, Chairman, if you allow the objection, or
22 sustain the objection, to questioning along these lines,
23 then I would propose that we be allowed to submit a copy
24 of the report and give the Applicant appropriate

1 response time akin to that which the Committee has
2 permitted in other instances?

3 CHAIR: Fine.

4 ATTORNEY SMITH: Could you identify for
5 us the title of the report you're relying on so we'd
6 know that --

7 ATTORNEY M. IACOPINO: Can I suggest that
8 that be done --

9 CHAIR: Yes.

10 ATTORNEY M. IACOPINO: After today's session
11 so that we can get moving. We do have a scheduling
12 issue.

13 ATTORNEY ROCHWARG: That's fine.

14 Q The pipeline in New Mexico was possibly 30 inches in
15 diameter, is that correct?

16 A That's correct. And again, just for the record, I want
17 to state, with all due respect to all the questions, and
18 I can sit here all day, my plane doesn't leave for a few
19 days, and answer all these questions. And I just want
20 us to be sure that we stay focused on this project, what
21 we're trying to do here and how we're trying to do it.
22 I don't want to evade any of these questions but I want
23 to focus on -- We're trying to testify on what we're
24 doing here and how that relates, so if you can make

1 those questions related to that.

2 ATTORNEY ROCHWARG: Absolutely. That's my
3 intention.

4 A Thank you.

5 Q There was a line of questioning previously by Attorney
6 Goodman where she asked you, I believe it was Mr.
7 Heinfeldz?

8 A (By Mr. Kleinhenz) I'm sorry, go ahead. Kleinhenz.

9 Q I'm sorry?

10 A That's close enough, just "Mr. K."

11 Q Mr. K, excuse me. I knew your name was Eric. I believe
12 that you previously were trying to describe to the
13 Committee and to Attorney Goodman, in response to our
14 inquiry in referring to the topographical chart which is
15 still up on the board there -- Attorney Goodman had a
16 line of questioning where she asked you what the
17 potential damage would be in the event of a rupture to
18 the pipeline in any given area. And you testified, I
19 believe, that it was difficult for you to provide a
20 response to that inquiry?

21 A (By Mr. Kleinhenz) Yes, to speculate. That's something
22 I had not been involved with, any pipeline ruptures at
23 the site of any of those, so I would not even be able to
24 assess what that could be.

1 Q Given the fact that the pipeline in New Mexico was
2 approximately 30 inches in diameter and the rupture
3 resulted in a 350 foot high fireball and caused a 20
4 foot deep and 86 foot long and 46 foot wide blast
5 crater, do you have an opinion as to what a comparable
6 rupture in a 20 inch pipeline would cause or result in?

7 ATTORNEY SMITH: I don't want to
8 prolong this but, I'd like to object to introducing
9 evidence that I've never seen. And I don't know that
10 that's the case in New Mexico and these witnesses have
11 testified that they have no direct knowledge. The only
12 thing they know -- We've tried to search on the web so
13 we could be helpful here today. So if there is evidence
14 of this type that counsel has, and they can provide it
15 to us, I'd like to see it. Otherwise, I don't think
16 it's proper to lace into the question information which
17 has not been put into the record in this case.

18 CHAIR: Why don't you just
19 answer that you don't know.

20 A (By Mr. Kleinhenz) I don't know.

21 Q If I would pose that to you as a hypothetical, avoiding
22 the instance of it being in Carlsbad, New Mexico, would
23 your response be the same?

24 A Sorry, I didn't --

1 Q If I were to pose that as a hypothetical, would your
2 response be the same?

3 A Yes.

4 ATTORNEY SMITH: I'm not sure I know
5 what the question is anymore. Could you tell us what
6 the hypothetical question is?

7 ATTORNEY ROCHWARG: My hypothetical would
8 include the same data which you objected to because it
9 has not been substantiated and you haven't seen that in
10 a report form.

11 Q If I were to pose it as a hypothetical, given the fact
12 that you would have a 30 inch diameter pipeline, a
13 rupture which resulted in a 350 foot high fireball
14 causing a 20 foot deep, 86 foot long, and 46 foot wide
15 blast crater, do you have an opinion as to what would
16 result in a similar rupture to a 20 inch diameter
17 pipeline?

18 A No, I do not.

19 Q Would Tennessee Gas be willing to expand their research
20 to develop innovative pipeline inspection tools?

21 A (By Mr. Hamarich) Well, we're already involved in --
22 The pipeline industry spends, I think the figure I heard
23 the other day was, 20 million dollars a year, as an
24 industry, developing and enhancing the pipeline safety.

1 So there's a lot of research going on into these type of
2 technologies, and Tennessee Gas already participates in
3 these type of -- Several of the people I work with are
4 on those types of committees, industry-driven
5 committees, to work on those type of things. So that
6 type of research and development is already in progress.

7 Q And is that 20 million dollars a year you said?

8 A I believe the quote I had is in the natural gas
9 pipelines themselves fund that much money in private
10 research organizations. Voluntary, I guess, is the
11 word, voluntary, --

12 Q Is that Tennessee Gas or --

13 A The industry, the natural gas transmission industry,
14 which Tennessee Gas is just part of.

15 Q And how much of that is contributed by Tennessee Gas?

16 A I cannot state that. Since we're a large company I
17 would say a big part of it but I cannot state that.

18 Q So you'd be speculating?

19 A But as an industry, this is an industry that's together
20 in developing these things.

21 Q In this particular instance, many concerns have been
22 raised regarding pipeline inspection. Would Tennessee
23 Gas be willing to expand its research to develop
24 innovative pipeline inspection tools?

1 A We're not in a position to make any comments on that
2 here in this hearing.

3 Q A couple of questions regarding the construction
4 specifications. Have the construction specifications
5 been developed as of this date?

6 A Yes, they have.

7 Q And have those been produced in connection with the
8 application?

9 A No, they have not. Parts of them are included in the
10 environmental construction plan and pieces of the
11 application, but the set of specifications, construction
12 specifications, have not been provided as any testimony
13 on this project, or any evidence.

14 Q I would request a copy of the construction specification
15 plan. There's been significant testimony concerning the
16 safety, the adequacy of the coating on the piping, the
17 adequacy of safeguards to ensure that contractors and
18 subcontractors perform their construction techniques
19 properly in accordance with the construction
20 specifications and plans. I think it's critical to any
21 decision that this Committee would make with regard to
22 the Applicant's request.

23 ATTORNEY SMITH: Mr. Chairman, we don't
24 object to producing that document.

1 CHAIR: Thank you.

2 Q And the final question, there's been testimony regarding
3 the proximity of the pipeline to the schools and the
4 Town of Londonderry. Are you aware of the fact that, at
5 any given time, there will be approximately 4,000
6 students in close proximity to this pipeline?

7 A No, I was not aware of that particular figure.

8 Q This may be a question for the environmental group. Let
9 me know if it is. There was an area of questioning that
10 I started on yesterday, I believe, concerning obtaining
11 easements for residents in the area of the meter station
12 in Sanborn. Is that more appropriate for right-of-way?

13 A What was the -- If you can ask the question, maybe I can
14 see the specific question.

15 Q What are the plans to deal with residents that live in
16 close proximity to the meter station at Sanborn?

17 A That are on the pipeline route or not on the pipeline
18 route?

19 Q That would be on the lateral pipeline from the meter
20 station forward?

21 A Oh, that, that -- After the pipeline leaves the meter
22 station, which is currently proposed on property owned
23 by Tennessee Gas Pipeline already, that is the
24 EnergyNorth project and you would have to direct those

1 questions directly to EnergyNorth.

2 Q So, in other words, it would be essentially futile for
3 someone who is a resident, at that point in time, to
4 come in and later object to the existence of the
5 pipeline as it heads toward them because it would
6 already be done, the pipeline has to go somewhere?

7 A That's not part of this proceeding. I can't comment on
8 that pipeline.

9 Q Have there been blasting surveys that have been
10 performed in that area of the meter station?

11 ATTORNEY SMITH: The question is about
12 the part of the pipeline that's being built by
13 EnergyNorth. This is an independent company. It has
14 nothing to do with that particular part of the project.
15 It isn't applying for approval for that part of the
16 project here. As I think we may all have in mind,
17 approval for that part of the project was granted by
18 EFSEC in a prior proceeding. And I think the witness
19 has testified, several times, that he doesn't know about
20 it. His company is not involved in it.

21 ATTORNEY ROCHWARG: I'm asking the
22 witness, though, Chairman, since it is integrally
23 related, if he's aware whether this type of
24 investigation has been done? I think it is relevant.

1 A (By Mr. Hamarich) Could you repeat the question?

2 Q Have any blasting surveys been performed --

3 A In --

4 Q To determine baseline existing conditions?

5 ATTORNEY SMITH: Where? I thought you
6 said in that area referring to the EnergyNorth pipeline?

7 ATTORNEY ROCHWARG: I said in the area of
8 the meter station at Sanborn.

9 A She's asking at the meter station. I want to try to
10 understand what you mean by 'blasting surveys' so that
11 I can give you the correct information.

12 Q Have any test borings been done?

13 A No. No, they have not.

14 Q Have any surveys been done to determine what types of
15 materials might be in the proximity of that meter
16 station, other than borings?

17 A No, other than what we see on the surface where there's
18 wetlands and rock outcrops and such as that.

19 Q Any testing for current water quality, that you're aware
20 of? Or if it's appropriate, we'll pose to another
21 witness.

22 A Yeah, water quality, I'd like to -- I can't say what
23 we've done on the water quality.

24 Q Who would be the witness?

1 A That would be John Auriemma. And we're talking about
2 Tennessee Gas pipeline's route?

3 Q Correct, up to and including the meter station.

4 A Yeah, the meter station's on Tennessee Gas' route.

5 Q One of the questions that I had raised that I believe
6 one of your witnesses told me you would be the
7 appropriate person to ask, but please direct me if
8 that's not true, can you tell the Committee every
9 instance that design standards used in the proposed
10 pipeline construction exceed federal standards?

11 A Yeah, we wrote it down. Where did we put it? We wrote
12 it down yesterday because I heard you ask that. Here we
13 go. Okay, let me go through a list here, and this may
14 not be all of them but this is the primary. One would
15 be when we X-ray the pipeline we do 100 percent X-ray of
16 the wells. That means we non-destructively test all of
17 the wells that is in addition to requirements. Calliper
18 pigging is not a mandate by regulations. That's
19 incorporated in our construction specifications and we
20 feel that's a benefit. As we discussed earlier, we've
21 agreed to put in 60 percent class pipe which is a
22 higher, thicker walled pipe, higher yield, as a minimum
23 along this pipeline. As Eric said, there's
24 approximately, half the pipeline would be classified

1 according to DOT requirements as a Class 1, requiring
2 only 72 percent pipe, and we're going to put in a 60
3 percent minimum. We're going to put 50 percent in
4 several areas, expand what is existing 50 percent, some
5 of what we talked about here, expand what might be
6 interpreted as a Class 2 and put in 50 percent pipe.
7 The depth that's covered in some locations will exceed
8 the requirements, in several locations, will exceed the
9 requirements. Our construction specs exceed the
10 requirements of the regulations.

11 We've discussed auto close valves that are in
12 addition to what is required in specifications. As far
13 as -- We've committed to put concrete coating at road
14 crossings to help protect from any third party damage or
15 touching of the pipeline. Fusion bonded coating, we
16 think that's beyond the performance requirements of the
17 specifications. It's a high quality coating and also on
18 the joints and on the field joints where the welds are.
19 And our mill inspection process and mill requirements,
20 we've got the API 5L pipe that we alluded to earlier.
21 Our standards go beyond some of the requirements there
22 in regards to some toughness requirements and mill
23 testing. Those are just a handful of things that
24 specifically relate to this project beyond some of the

1 standards.

2 Q And in what ways do the current design specifications
3 and construction specifications that have been
4 established meet or exceed state standards under Section
5 500 of the PUC?

6 A We are not regulated by the PUC. Therefore I'm not
7 familiar with those standards and cannot say where they
8 vary.

9 Q Has there been any effort by Tennessee Gas to coordinate
10 with public utilities, cable companies, etc., to only
11 dig up at road crossings on one occasion?

12 A I'm sorry?

13 Q Has there been any effort by Tennessee Gas to try to
14 coordinate with public utilities, cable companies and
15 the like, to ensure that the proposed construction and
16 trenching at road crossings be done in a single
17 instance?

18 A Not at this time. This will probably be independent.
19 We'll be running along the corridor perpendicular to the
20 road. Most of those run parallel to the road. We don't
21 know -- We haven't gotten far enough in the process to
22 know if they've got any reason to look at their system
23 at the same time. I think that's what you're referring
24 to, maybe, if the trench is open that --

1 Q Correct. Is there any intention by Tennessee Gas to do
2 that?

3 A As part of the construction program Tennessee Gas will,
4 again, we become a constructor, or our contractor does.
5 We have to comply with Dig-Safe so we have to notify
6 Dig-Safe. And, in advance, we'll have to work with some
7 of these companies to get permission and get them out
8 there to observe their facilities so when we cross their
9 facility, whether it be another pipeline or a cable or
10 a sewer line, that we meet the requirements that they
11 have. So that they're there to protect their facility
12 while we're installing and removing our pipeline.

13 Q And I just have one final question. I believe that Vice
14 Chairman Patch raised this, requesting a discussion by
15 someone on the panel, as to what the various classes of
16 pipeline mean, 1 through 4 that is?

17 A I think Eric was going to read that out.

18 A (By Mr. Kleinhenz) I'll start with Class 1 here. "A
19 Class 1 location unit is an onshore area --

20 CHAIR: What are you reading
21 from?

22 A I'm sorry. I apologize. I'm reading from Federal
23 Regulations, 192, Part V, of class locations. CFR 49,
24 I'm sorry.

1 Q 49 CFR 192?

2 A Right, .5.

3 Q Thank you.

4 A Okay, are we ready again? Sorry about that. "Class 1
5 location unit is an onshore area that extends 220 yards
6 on either side of the center line of any continuous one
7 mile length of pipeline." So whenever we do a class
8 location determination it is based on, from the pipe,
9 220 yards to each side.

10 A (By Mr. Hamarich) For a continuous mile, within a mile,
11 sliding mile.

12 A (By Mr. Kleinhenz) "Each separate dwelling unit and a
13 multiple dwelling unit, the building is counted a
14 separate building intended for human occupancy." That's
15 just laying out the definition. A Class 1 location is
16 any offshore area -- I'm sorry, that doesn't pertain
17 here. "Any class location unit that has ten or fewer
18 buildings intended for human occupancy." Class 2
19 location is "Any location unit that has more than ten
20 but fewer than 46 buildings intended for human
21 occupancy." And Class 3 location is "Any class location
22 unit that has 46 or more buildings intended for human
23 occupancy or an area where a pipeline lies within a
24 hundred yards of either a building or a small, well-

1 defined outside area, such as a playground, recreation
2 area, outdoor theater, or other place of public
3 assembly, that is occupied by 20 or more persons on at
4 least five days a week for ten weeks in any 12 month
5 period." And then a Class 4 location is "A class
6 location unit where buildings with four or more stories,
7 above ground, are prevalent." That's the definition.

8 ATTORNEY ROCHWARG: I don't have any
9 further questions for this panel.

10 CHAIR: Thank you.

11 ATTORNEY WAGELING: Mr. Chairman?

12 CHAIR: Yes.

13 ATTORNEY WAGELING: I had a couple of
14 questions, if you don't mind, before the panel asks
15 questions because we had an opportunity for some further
16 dialogue during the lunch break, and I think that some
17 of the information that was provided to the Committee
18 during the direct testimony and cross might have changed
19 slightly. And so, with the Chair's permission, I would
20 like to clarify some of those issues. We've reached
21 some agreements on issues that I had crossed them on, if
22 that's okay?

23 CHAIR: Fine.

24 ATTORNEY WAGELING: Thank you.

1 **FURTHER CROSS-EXAMINATION OF PANEL BY ATTORNEY WAGELING:**

2 Q During earlier testimony there were questions posed of
3 the panel relative to the ground heave issues and
4 whether or not testing would be conducted to ensure that
5 ground heave was kept to a standard. Do you recall
6 those questions?

7 A (By Mr. Kleinhenz) Yes.

8 Q Has Tennessee Gas Pipeline agreed to change their
9 position relative to the ground heave issue?

10 A Yes, we have.

11 Q Could you tell the Committee what that change is and
12 what will be implemented?

13 A Yes. What we'll agree to do is in locations in these
14 blasting areas that we will measure ground heave.

15 Q And what is the minimum standard that will be tolerated,
16 or the maximum standard, I'm sorry?

17 A The maximum standard for ground heave in these areas,
18 the toleration limit will be one inch.

19 Q And will you agree to conduct ground heave testing in
20 every blast site?

21 A Yes.

22 Q There was also a discussion relative to pre and post
23 well surveys. And I'd like for you to clarify what the
24 position is of Tennessee Gas relative to surveying water

1 sources, well and spring water sources, both pre and
2 post blast?

3 A Okay, we were going to leave that one for the
4 environmental. Okay. Okay. That's fine. Again,
5 within 200 feet we're going to be conducting pre and
6 post blast surveys for each unit.

7 Q And, just to clarify, because I think that there was a
8 difference between, and maybe I'm wrong here but, I
9 think that there was a difference between what was
10 contained in the ECP, EPC, and what the testimony was,
11 are you going to conduct post blast surveys of wells
12 only if there's alleged damage or will you do so at all
13 wells within that 200 mile radius?

14 A Two hundred feet?

15 Q Sorry about that.

16 A I thought we discussed about as requested, 200 --

17 ATTORNEY SMITH: I'm sorry, I think I'm
18 confused. I thought part of the discussion was if there
19 were a number of wells all in the same locus --

20 A (By Mr. Kleinhenz) No, no, that --

21 ATTORNEY SMITH: That's a different
22 issue?

23 A Yeah, that's a different issue.

24 ATTORNEY SMITH: Alright. I withdraw

1 that.

2 A I'm going to say yes. I'm sorry, I apologize. Yes,
3 we're committing to pre and post-blast surveys.

4 Q On all wells?

5 A On all wells within 200 feet.

6 Q And lastly, an issue was raised during my examination of
7 the panel relative to an independent inspector relative
8 to blasting issues. And during the lunch break we
9 received information about whether or not there was
10 somebody qualified within the state's system to provide
11 that inspection capability, do you agree with that?

12 A Yes.

13 Q Does Tennessee Gas Pipeline agree to submit a specific
14 blasting plan to the Department of Safety for approval
15 and review of the blasting plan prior to the
16 commencement of construction and, additionally, to
17 provide progress of the blasting and all measurements
18 obtained in the field, as we've already discussed, for
19 the ppv and the heave?

20 A Yes.

21 ATTORNEY WAGELING: Thank you. I have no
22 other questions.

23 ATTORNEY GOODMAN: Could I just have one
24 clarification on the record?

1 CHAIR: Sure.

2 ATTORNEY GOODMAN: Thank you. When you
3 said "Yes" to the post blast survey, was that "Yes" upon
4 request or "Yes" you will do all wells?

5 A Yeah, and the only question I had was I didn't know
6 about in a situation if someone refused. That's why we
7 usually have it at the request and that's why I was --
8 If we have permission we'll do it.

9 ATTORNEY GOODMAN: I think the question
10 would be, would you make a request of each landowner and
11 ask to test their wells? Would you do that?

12 A Yeah, we can do that. That was my only -- I was trying
13 not to get --

14 ATTORNEY WAGELING: No, that's correct.

15 ATTORNEY GOODMAN: I mean, obviously if
16 the well owner says you can't.

17 A Right. That's what I'm --

18 ATTORNEY GOODMAN: But it's different
19 when they have to request it of you?

20 A Right. That's right. That's fine.

21 ATTORNEY GOODMAN: That's not what we're
22 talking about.

23 A I just wanted to clarify.

24 ATTORNEY WAGELING: Thank you. I have no

1 other questions of the panel. Thank you.

2 CHAIR: Thank you. Any follow
3 up questions?

4 ATTORNEY SMITH: Do we?

5 CHAIR: Yes?

6 ATTORNEY SMITH: Actually I do, Mr.
7 Chairman. I don't know whether the Committee had any.
8 And if we were going to go simply to my follow up
9 questions, I was wondering if it would be possible to
10 take a short break at this point instead of after I do
11 that?

12 CHAIR: Sure.

13 ATTORNEY SMITH: I assume we're getting
14 maybe close to an afternoon break time.

15 ATTORNEY V. IACOPINO: Mr. Chairman, we're
16 going to request that we somewhere allow Public Counsel
17 to present a witness out of order and also provide Mr.
18 Marini out of order so we can get them in today.

19 ATTORNEY WAGELING: And it's my
20 understanding that there is no objection by any of the
21 counsel with that arrangement if that's okay with the
22 Committee?

23 CHAIR: Well, the only
24 question is whether we, as a Committee, want to ask

1 questions while it's still fresh in our minds.

2 ATTORNEY WAGELING: Sure. No, we were
3 expecting that that would occur. We just wanted the
4 panel --

5 CHAIR: After, after we're
6 finished with this panel?

7 ATTORNEY WAGELING: Yes.

8 CHAIR: Yes. Okay, why don't
9 we take a five minute break. Thanks.

10 (Off the record for break)

11 CHAIR: Okay, we'll continue
12 with this panel with questions from the Committee. Deb
13 Schachter?

14 MS. SCHACHTER: Thank you.

15 **EXAMINATION OF PANEL BY COMMISSIONER SCHACHTER:**

16 Q I have just a few areas of questions. First, I'm
17 interested in clarifying better the Company's position
18 relative to running a test with the smart pig. And what
19 I believe Tennessee Gas has represented to us in one of
20 its filings is that running a smart pig, in the
21 Company's view, within three years of construction would
22 be too short a time frame to offer a useful integrity
23 assessment of the pipeline. And I'm interested, then,
24 in your position of what period of time would be

1 sufficient to afford a useful integrity assessment?

2 A (By Mr. Kleinhenz) What that is dependant on is the
3 pipeline's specific susceptibilities to corrosion. So,
4 as Mark had alluded to before, when we look at pipelines
5 we look at their susceptibilities, in other words, where
6 they're located. And we also go by existing data when
7 we go through our annual corrosion surveys to verify
8 that we've had proper cathodic protection because, as we
9 have stated, that if all those are in place, the
10 cathodic protection stays up to place, we have good dry
11 gas, all these parameters, then obviously that need for
12 intelligent pig would be not as critical. Because,
13 again, intelligent pig is not a catchall. It's one
14 aspect of the pipeline's integrity system program, and
15 it's just one aspect. And so, that has been factored
16 into all the other integrity programs that we have in
17 place. And so, that's why there's not a set criteria to
18 say we need to do it in ten years because after ten
19 years, based on the information that we have, we may see
20 no need for that. And so, again, it's not a catchall.
21 It doesn't tell you other than the big things that
22 exist, potentially, in terms of corrosion.

23 Q I'd like to ask a related question, then, if I might?
24 In the -- Well, let me start it this way. If I

1 understood the testimony up to this point correctly, it
2 sounds like the Company has plans to conduct external
3 monitoring of various sorts but has no current plans,
4 and has not made any commitment, to internal testing
5 after construction is completed. Am I understanding
6 that correctly?

7 A (By Mr. Kleinhenz) That is correct.

8 Q I would ask you then, in the materials that were
9 provided to the Committee on the 11th of this month,
10 included were materials that were delivered to the
11 landowners and among those was an El Paso Energy
12 brochure regarding pipeline safety. And one of the
13 representations in that pamphlet, I'm reading as
14 follows, "The Company also performs periodic inspections
15 and testing on the interior of the pipeline to verify
16 system integrity." And I wonder if you could please
17 explain to what that representation refers and what it
18 means?

19 A (By Mr. Hamarich) Yeah, that refers to what I was
20 talking about earlier. We started a program in the
21 early 80's along our system to internally inspect the
22 pipelines, and we've been implementing that program
23 based on a priority basis of the needs in the area and
24 whatnot. And I also testified that the New Hampshire

1 segments of pipeline have yet to be internally
2 inspected, either the eight inch, the six inch or the 12
3 inch, but that I know that in the near future, and I
4 can't say exactly when, those pipes will be internally
5 inspected, sections of those pipes will.

6 And back to your other question, I think I know
7 where we're going here. I don't want to go over and
8 over about our proposed maintenance. I would propose
9 that, possibly, we really feel that three years is too
10 quickly for the reasons we've brought forth. We also
11 agree that pigging is a good method of internally
12 inspecting the pipe down the line during operations to
13 ensure that should, for some reason, these systems not
14 be working, should there be an upset, to verify, and we
15 look at it as a means to verify the integrity of the
16 pipeline. We then, based on the operating condition or
17 something here, we might be willing to consider
18 something out in the future but it would be more like a
19 20 year future, not a three year future as a pigging
20 program. We haven't decided if we really want to do
21 that. It's a situation where it's a precedent setting
22 thing but -- And there's ongoing committee discussions
23 in the industry that this is going to be mandated
24 eventually. It's going to come eventually. It's going

1 to come regardless of if it's agreed to in this room, or
2 this project, today. It's probably going to come as an
3 industry of some sort of pigging program, more defined
4 than what our company is already doing.

5 CHAIR: Could you read that
6 brochure again, the wording in the brochure.

7 MS. SCHACHTER: I would be happy to,
8 Mr. Chairman.

9 CHAIR: Could we hear that
10 again after hearing the answer?

11 MS. SCHACHTER: What I read into the
12 record was from a page in which one of the headlines
13 above this is "Pipeline Safety: Prevention and
14 Preparedness." And I believe it's actually the last
15 page of the documents that were submitted to the
16 Committee on October 11th and it included the documents
17 that were provided to the landowners. Yes, I believe it
18 is Exhibit 45.

19 A (By Mr. Hamarich) And what does it say exactly?

20 Q And what it says, and I quote in the second column, "The
21 Company also performs periodic inspections and testing
22 on the interior of the pipeline to verify system
23 integrity." Is there anything further you want to add
24 in explaining that representation?

1 A No. What that is is that's our program where we have a
2 program where we periodically do that on the pipelines.
3 And it goes through a program where, eventually, all the
4 pipes in the ground will be pigged and made piggable as
5 time goes on. It does not state that everyone's been,
6 done or is going to be done next year, at periodic --

7 Q So, at the risk of belaboring this, if I'm a landowner
8 who's received this material and I understand that
9 representation to assure me that there's a specific
10 periodic inspection and testing scheduled for the
11 interior of the proposed 20 inch pipeline, I would be
12 misunderstanding the representation?

13 A It's not scheduled, it's just --

14 ATTORNEY SMITH: May I just ask, I'm
15 sorry, I can't find exactly where you're referring. Is
16 it this document? No?

17 MS. SCHACHTER: In the top left-hand
18 corner of the page it says "Natural Gas, The Fuel of
19 Choice," and then in the right-hand column there's a pie
20 chart and then that heading I was reading from. It says
21 "Pipeline Safety Prevention and Preparedness."

22 ATTORNEY SMITH: Here it is. This
23 document?

24 MS. SCHACHTER: I'm sorry, maybe my

1 pages got out of order. That is the correct page but it
2 is the last page of my packet.

3 A Which paragraph? I want to read the exact --

4 Q The final paragraph on that page, about halfway through
5 the paragraph, after the reference to "365 days a year."

6 A (By Mr. Hamarich) Yeah, and that can also mean periodic
7 inspections, can mean hydrostatic testing. It doesn't
8 necessarily mean pigging. I could see where you might
9 read that into it, yes.

10 Q I would like to ask a different question about patrols
11 regarding the --

12 CHAIR: Okay, before you leave
13 that one, Deborah, --

14 MS. SCHACHTER: Oh, I'm sorry, go
15 ahead.

16 CHAIR: Would the Company be
17 willing to clarify the language and material that it
18 provides to the public? I go to the dentist
19 periodically but I don't go every 20 years as my
20 definition of going periodically.

21 A Right, right. I agree. I agree. We're willing to
22 discuss that.

23 MS. SCHACHTER: Mr. Chairman, my guess
24 is that other members of the Committee may have further

1 questions about the smart pig so I think I'll have more
2 chance, perhaps, to revisit that.

3 Q I do have a question regarding routine patrols. I
4 believe, Mr. Hamarich, at paragraph 17 of your
5 supplemental direct pre-filed testimony, you refer, and
6 this is just one example because I think your
7 representation is made elsewhere in the application and
8 in materials presented to the Committee, that Tennessee
9 routinely patrols the entire length of the natural gas
10 transmission pipeline by air and ground looking for
11 excavations, etc. I confess I was surprised today to
12 hear you say that the Company's unwilling to commit to
13 any specific schedule or even to conduct those on a
14 known periodic basis. Can you explain the reluctance of
15 the Company to make such a commitment please?

16 A (By Mr. Hamarich) No, let me clarify. The commitment
17 was I could not sit here and commit to anything more
18 specific than what is in the Department of
19 Transportation regulations, and I can quote the
20 frequency on there. I stated that, at this time, we
21 patrol by air on a more frequent basis than is required
22 by the DOT guidelines but I could not commit to that in
23 this proceeding for this particular section. And I can
24 explain to you about the, basically, what it says in

1 patrols. It says that, "Each operator shall have a
2 patrol program to observe surface conditions on an
3 adjacent to transmission line right-of-ways for
4 indications of leaks, construction activities and other
5 factors. The frequency of the patrols is determined by
6 size of the line, operating pressures, class location,
7 terrain, weather, but intervals between patrols may not
8 be longer than prescribed in the following table." So
9 in Class 1 and 2, "at highway crossings, at no greater
10 intervals than every seven and a half months but at
11 least twice a year." So in the Class 2 locations you
12 would at least have to observe those highway crossings
13 at least twice a year, according to regulation, and at
14 other places only 15 months.

15 In Class 3, "every four months at roads and highway
16 crossings and all other places seven and a half months."
17 But in New England, because of the high growth in New
18 England, our company has been committed to regular
19 helicopter flights, but I cannot commit to that here.
20 That's what I was obligating to or was alluding to.

21 A (By Mr. Kleinhenz) Right. That is a decision made by
22 the operations group. And that would be, obviously,
23 something that they would be involved with as well and
24 they're not represented here today. But again, that's

1 what Mark had stated, that obviously, at a minimum,
2 we're doing that. That is what we're --

3 A (By Mr. Hamarich) And I believe our O&M manual may have
4 even other parts, but I cannot commit to deviate from
5 this procedure at this time because of our OPS oversight
6 and compliance program.

7 Q I'm sorry, you just said that your O&M manual may
8 provide still further specifics about overflight
9 monitoring or some other aspects of this --

10 A Yeah, a little bit but. The O&M manual is something,
11 another manual that the Company has and we're operating
12 under now, that takes these standards. And I've talked
13 about material specifications and construction
14 specifications where we've developed detail. We've got
15 an O&M operation and maintenance manual that also
16 outlines those procedures.

17 Q Is that a manual that --

18 A In addition to anything that's in here.

19 Q Sure. It doesn't supplant, of course, the federal regs.
20 It would supplement.

21 A No, it supplements.

22 Q And is that material that has been made available to
23 this Committee in this proceeding, do you know?

24 A No, it has not up to this point.

1 Q Would the Applicant have any problem agreeing to share
2 that with us so we could have a better understanding of
3 what your maintenance and monitoring requirements are?

4 A Well, this is something that is similar to the emergency
5 response plan that we talked about yesterday, the
6 records that we talked about earlier this morning of
7 releasing. These are things where -- For instance, our
8 Hopkinton area, we're regulated by the Office of
9 Pipeline Safety. They've been in the last -- They've
10 been hitting a lot of Tennessee Gas locations recently
11 but they came into Hopkinton last month. They do
12 routinely, they come in, they check all the records,
13 they look at your manuals and they have oversight
14 authority over all of those regulations. So, I'm a
15 little bit, I'm not trying to hide a thing but, I'm a
16 little bit uncomfortable of what I can hand over, what's
17 it's going to be used for. We've got a system that's
18 operating. It's been operating here for 50 years. I
19 don't know how the State of New Hampshire specifically,
20 since we're not regulated by PUC but PUC's involved in
21 our business, it's really OPS, I don't know how that
22 interchange has gone at this point, and maybe --

23 Q For purposes of this specific issue, I wonder if I might
24 narrow my request. Would it be possible, with reference

1 to your O&M manual, to educate the Committee before the
2 closure of the proceedings about any more specifics
3 concerning overflights or other external monitoring and
4 the frequency of that monitoring?

5 A We can do that and we can provide information prior, if
6 not this evening. I've got a manual with me and we can
7 bring that. I didn't have it with me. I was going
8 right from this.

9 CHAIR: Deborah, are you
10 looking for information which exceeds the federal
11 requirements primarily?

12 MS. SCHACHTER: Yes, in particular,
13 exactly.

14 A (By Mr. Kleinhenz) And if that were the case then we
15 would honor that as well.

16 Q Okay. Well, we'd appreciate that information. Thank
17 you.

18 A (By Mr. Hamarich) And I'd like to be able to quote it
19 completely but we just revised the O&M manual as we've
20 combined companies and I want to make sure I represent
21 the facts.

22 Q Very good. Thank you.

23 MR. CANNATA: Could I ask a follow-
24 up on this exact subject?

1 CHAIR: Sure.

2 **EXAMINATION BY COMMISSIONER CANNATA:**

3 Q In reality, when you have a pipeline that's a mixture of
4 the various classes, do you actually go out three times
5 a year on one part of the pipeline and two times -- What
6 does that mean in reality from a cost-effective basis?

7 A (By Mr. Hamarich) Yeah, as far as we operate, we're
8 going to patrol this pipeline like it was a Class 3
9 because it's intermittent. So we're not going to say,
10 "Well, that's Class 2 road crossing. We're not going to
11 look at that."

12 Q Is that something you could commit to?

13 A From our part of view. But as a rule, I can't say that
14 I would commit to operate it in addition to what's here.

15 I could say what's normally done in the O&M
16 manual. The helicopter doesn't fly and go around. But
17 I can't say that, for instance, a road crossing, I can't
18 say that if for some reason it was a true Class 2 and we
19 didn't have documentation of checking a leak at that
20 road crossing, I can't comply, I can't commit to any
21 additional conditions, at this point, than what is the
22 actual locations.

23 A (By Mr. Kleinhenz) And I think once we present that, I
24 think that will clarify all the questions as what we

1 actually have in the O&M manual.

2 Q Alright, I'll hold off on that.

3 CHAIR: Deborah?

4 MS. SCHACHTER: Thank you.

5 **EXAMINATION BY COMMISSIONER SCHACHTER:**

6 Q Just a couple more questions, I think. If I understood
7 the testimony correctly with regard to the corrosion
8 risk that may be caused by liquids or impurities that
9 might get into the system, the Company has presented
10 testimony that we shouldn't worry about that because the
11 gas here is very dry. But I was a little bit confused
12 then, at other testimony which I believe indicated that
13 there was going to be a filter installed, for example,
14 at the Dracut interconnection where there's a risk of
15 picking up liquids. And I guess I wondered if you could
16 just help me understand what risks may occur at the
17 interconnections of picking up liquids and does that
18 risk change the confidence that we should have about the
19 dryness of the gas that's coming into the pipeline?

20 A (By Mr. Hamarich) First off, let me clarify the
21 situation. In Dracut itself there won't be a filter
22 set, but just upstream of Dracut, and in Dracut,
23 Massachusetts, not part of this project, the Maritimes
24 Northeast Pipeline interconnects with Tennessee Gas.

1 There is a filter separator at that location. That is
2 a redundant system. They deliver pipeline quality gas
3 from Canada, a couple of sources. But prior to entering
4 the main system, primarily Tennessee's system, that's
5 another area that we want to be sure that we're getting
6 pipeline quality gas into our system therefore, at that
7 interconnect, it's there. Also, there's a heater and
8 there's regulation and there's all these complex issues
9 where the properties of the gas could change. So that
10 filter separator, and that is there to protect the gas
11 entering our system at that point to maintain that
12 quality gas, that's one thing not related to this
13 project. So there's been discussions at Dracut. At the
14 other end, what Rob testified to, power producers have,
15 for independent reasons than our pipeline quality gas,
16 they've had to, at times, install that prior to
17 delivering gas to the turbines that generate the
18 electricity, the gas fired turbines. And it's more of
19 a warranty issue with the power producer, the
20 manufacturer of the turbine, because the turbine is such
21 an expensive piece of equipment. It's not just liquids
22 and, primarily not liquids, but if for some reason a
23 small piece of metal or something, some solid, made it
24 through the pipeline system through some upset system

1 and comes to the turbine, that's primarily designed to
2 protect that piece of equipment.

3 Our guarantee is pipeline quality gas to these,
4 transport pipeline quality gas, but they have to put
5 this redundant system to protect their equipment.
6 That's my understanding of it.

7 Q Did you want to supplement your answer or does that
8 complete your answer?

9 A No, that's my answer.

10 Q I guess, finally, I want to commend the Applicant on
11 agreeing, during the break, to have post blast testing
12 for all wells within a specified distance from the
13 pipeline provided landowners agree to access. And I
14 wanted to ask with regard to non-well facilities, homes
15 or other structures, is there a reason for requiring the
16 landowner to affirmatively request that post blast
17 testing? If you could help us understand better. Or
18 perhaps I misunderstood the commitment that had been
19 made. I thought it was wells specific?

20 A Yeah, I'd rather, if I could, I'd rather wait and
21 discuss that with our right-of-way people because
22 they're the ones that have contact with the public and
23 can better expand on reasons to or not to do that --

24 Q Okay. Very good.

1 A Because they're the ones that are dealing with that.

2 MS. SCHACHTER: Thank you, Mr.
3 Chairman. That's all my questions. Thank you.

4 CHAIR: Michael?

5 MR. CANNATA: I have a host of
6 questions and I want to apologize because they bounce
7 around, as did the cross, and I just jotted them down.

8 **EXAMINATION BY COMMISSIONER CANNATA:**

9 Q Can you give us an idea on what the blasting spec would
10 be for a new pipeline? If you were just installing this
11 20 inch pipeline without having an existing pipeline
12 right next to it, it was a new right-of-way, what would
13 be the standards you'd be using?

14 A (By Mr. Hamarich) It would be, I don't know about the
15 specifics but it would be more than the four feet per
16 second peak particle velocity.

17 Q Yeah, that's what I'm trying to get a feel of, just what
18 that number would be?

19 A For instance, --

20 A (By Mr. Kretschmer) If you were to install a new
21 pipeline with no pipeline adjacent to it, the four
22 inches per second doesn't make any difference. What you
23 would then do is protect the closest structure, and that
24 would be going back to your RI 8507, the two inches per

1 second, at that structure. So that would be how your
2 blast design would be.

3 Q And the attenuation that one gets from distance, I
4 imagine that this is a logarithmic scale, I imagine it
5 goes as the square, or goes down as the square, or some
6 function like that?

7 A Yes, yes.

8 Q So two inches per second would equate to some number, at
9 least in my rough calculations, something much larger at
10 200 feet?

11 A If you were to get two inches per second at 200 feet,
12 that would be a very substantial blast 200 feet away.

13 Q Yeah.

14 A Quite substantial, much, much more than what we're
15 looking at here for pipeline.

16 Q And I think it was Mr. Haas who gave me a list of the
17 dates of school buildings and additions, and it did not
18 include minor additions such as ballfields, etc. And
19 I'm wondering, was there any concerns during any of this
20 construction activity that was passed on to Tennessee
21 over the 40 or 50 year period from the schools as they
22 expanded?

23 A (By Mr. Haas) There were no specific concerns that were
24 raised with Tennessee that I'm aware of. Typically what

1 happens is, whenever construction occurs near the
2 pipeline the whole Dig-Safe program is to try to get us
3 to come out and mark the lines and monitor the
4 construction. But I'm not aware of any specific
5 concerns on those expansions.

6 Q And I think, Mr. Hamarich, you testified that there were
7 four phases that received approval from this Committee
8 on the 12 inch pipeline?

9 A (By Mr. Hamarich) It might have been three -- It was
10 '81, '85 --

11 Q Eighty-nine and --

12 A Eighty-nine, and I thought there was another one.

13 Q There's at least three?

14 A There's at least -- Maybe it was three. Maybe I'm wrong
15 there and I --

16 Q Were you --

17 A It was '81 and '85 that affected this route. It could
18 have been '89.

19 Q Were you aware of any interventions at that time? Were
20 there any interventions by school districts or other
21 towns along the routes?

22 A I was not directly involved in the application process
23 such as this, the formal, so I cannot say "Yes" or "No"
24 on that.

1 Q We also talked about sources and the proximity of
2 sources, how they have the potential to put impurities
3 into the gas. And I guess I just wanted to clarify the
4 record, a little bit, in that the closest source to New
5 England was in Pennsylvania. That's storage capability,
6 I think you testified to that, and the impurity one
7 would most get out of storage would be probably water
8 vapor?

9 A I believe it would be the water coming up.

10 Q And if we were to go back to a well head application,
11 and it's a little education process, where does butane
12 and propane come from?

13 A I'd like to get Al to help us on this.

14 A (By Mr. Richardson) Any production from underground
15 sources, either from a source of supply of production
16 well or a storage area, would carry water vapor with it,
17 and that water vapor would have to be knocked out to get
18 it to pipeline quality. There are several other things
19 that could come out with it such as sulphur and things
20 of that nature, and those are closely controlled also.
21 And the carbon monoxide, I guess it is, that can come
22 out with that. And those are all removed in getting it
23 to pipeline quality gas.

24 Q Then I wanted to go to the well head on, what is the

1 difference now it's moved back to the well head? It's
2 my understanding that that's a much different process of
3 cleaning up well head gas versus coming out of a cavern.

4 A Yes, and a lot of times there's more stuff coming out
5 with the well head gas, and that's the propane, butane,
6 ethane, and so forth. Methane is what we're really
7 looking for to ship as pipeline quality gas but it comes
8 out of some mixture and those are hydrocarbons are
9 stripped out and sold separately, most of the time. It
10 certainly doesn't come up the pipeline in that form.

11 Q So it's probably in the gas fields much harder to clean
12 up the gas than it would be in this area of the country?
13 I would expect --

14 A In this area of the country, meaning New Hampshire,
15 there's nothing to clean up. Down in Pennsylvania where
16 it's coming out of the storage wells the clean up
17 process is a great deal simpler than it is down in say
18 the Gulf Coast area where you're bringing offshore gas
19 in.

20 Q Do we have an estimate of what it would cost to run an
21 intelligent pig run? And I guess there's two ways you
22 could run it. One is recommended by the gas safety
23 division at the PUC which said within three years, and
24 then the alternative would be to run it initially at the

1 same time the calliper pig was being run. Is there a
2 cost differential between the two?

3 A (By Mr. Kleinhenz) What do you -- An incremental cost?

4 Q Yeah. What is the incremental cost of running the
5 intelligent pig as suggested by the PUC safety division,
6 question one? Question two is, what would that
7 differential be if it was to be done right upfront
8 before the pipeline went into operation?

9 A Instead of the first three years versus? I would say if
10 we, again, this is without running the numbers but I
11 would say that running it in construction would range in
12 \$100,000 to \$150,000. And then if you were to do that
13 later on you could tack on another \$70,000 probably.

14 Q Two twenty-five is the number, somewhere in that
15 magnitude, just a rough number?

16 A Yeah.

17 A (By Mr. Hamarich) I also want to just state that it's
18 not so much the cost we're looking at here it's what we
19 get out of the baseline, what we would do with the
20 information. Running the pig is one thing. The other
21 thing is you would have to go out and you would
22 probably, if you found any indications on the pig, you
23 would probably have to make some sort of a test dig to
24 at least calibrate that baseline run of some sort so you

1 knew if you picked up a weld seam or to verify on that
2 type of situation. That's where you have to set up --
3 And there's a timing issue. You have to put magnets
4 every mile or so, every road, so when this pig runs you
5 have to be able to know where it is along the pipeline.
6 It also -- It hits a magnet and it's like an odometer
7 inside the pig and then you know -- You start at Dracut
8 and you know when you hit the Pelham town line and when
9 you hit Londonderry and Windham. And you'd have to go
10 out and make these test digs because the run, it's just
11 relative data and you'd have to go out -- The pigging
12 program, you'd have to go back out on the right-of-way.
13 You'd have to trench and do some verification. So one
14 of the concerns from original construction is your
15 timing. You'd have to have your pipeline complete and
16 then you'd have to have the gas flow in there and then
17 you'd have to adjust the pigging, and all the timing of
18 bringing the gas to the plant. So there's some
19 logistics involved besides the timing, besides the cost.

20 Q And isn't it true that an intelligent pig gathers more
21 information than just that of corrosion? Could you get
22 into some of the other things, the other types of
23 information that an intelligent pig can gather in the
24 run?

1 A (By Mr. Kleinhenz) Intelligent pig will pick up things
2 that sometimes are not even actually there. And that's
3 sometimes a problem with trying to read an intelligent
4 pig, what you'd call a run. But sometimes they'll pick
5 up laminations in the pipe. They will pick up -- Right,
6 nondetrimental laminations. They will also pick up
7 welds, any -- And that's why we're gearing towards --
8 With welds we've done 100 percent X-ray, which would be
9 a redundant issue, but it does pick up any weld issue,
10 something with the weld deformation or whatever. Yeah,
11 it actually picks up the presence in the weld so you
12 actually can see the weld as you run that through.

13 But again, it's the big things that it picks up
14 that is the big concern when you have an intelligent pig
15 run.

16 A (By Mr. Richardson) Can I mention something here?

17 CHAIR: Briefly.

18 A The way that intelligent pig works, it's looking at the
19 ability of the pipe wall to conduct the magnetic flux
20 around it. And because there's got to be some tolerance
21 in there, that pig moves around as it's going down the
22 line and, depending on what it's doing, it produces, I
23 think, what they call grass in the data. And you've got
24 to, for a particular pig on a particular run, you've got

1 to determine what the proper level is for that grass and
2 what becomes a defect that you want to look at over and
3 above that grass. So the pigs aren't as intelligent as
4 we'd like them to be.

5 Q Not as intelligent as the real ones.

6 A That's right.

7 Q There was also a discussion about the contractor being
8 the weak link in the safety aspect of the pipeline.
9 It's my understanding that you have complete control
10 over your contractor. You set up standards for your
11 contractor and if they don't follow those standards
12 they're off the job?

13 A (By Mr. Kleinhenz) That is correct.

14 Q When you were talking about placing gas valves, they are
15 methane operated valves correct?

16 A They are natural gas operated.

17 Q Natural gas operated valves. And, if I recall
18 correctly, it's my understanding that the explosion in
19 Edison, New Jersey was aggravated for the fact that the
20 gas operated valves did not work because there wasn't
21 enough gas present in the pipeline to operate them. And
22 my question is, are these redundant such that they have
23 nitrogen backup, or something like that, to ensure that
24 they will operate?

1 A Yes, they do. They have backup volume tanks.

2 Q Would you be able to supply me, and I don't want to take
3 the time right now, a schematic diagram of where you
4 would be placing these valves in the system because you
5 talked about having it run in common with the existing
6 12 inch line, and I just want to get a feel of where
7 you're going to place these valves and how they would
8 operate under different conditions in conjunction with
9 the existing 12 inch line?

10 A Yes, I can provide you with that.

11 Q If you'd do that please and save an exhibit for that.
12 Are you going to be in contact with the power plant
13 producer, AES, and set these valves such that load
14 variations on either on the EnergyNorth system or load
15 variations due to the AES power plant will not falsely
16 activate them, and set them accordingly?

17 A Yeah, we'll coordinate that.

18 Q I think there needs to be some clarification on the 200
19 foot zone away from the pipeline. My understanding was
20 that Haley & Aldridge had accepted 200 feet for the
21 portion where you were parallel to the existing 12 inch
22 line. Now that you've accepted the four inches per
23 second blast criteria for the entire length of the line,
24 just to make sure that the record's clear, the 200 feet

1 applies to the total line, is that correct?

2 A That is correct.

3 ATTORNEY WAGELING: For the record, I'll
4 indicate to the Committee that we're prepared to present
5 testimony to corroborate that assertion, that we will
6 retract the contents of our report as it relates to the
7 300 feet.

8 Q And when did Tennessee sign a gas supply agreement with
9 AES?

10 A We're looking that up.

11 A (By Mr. Haas) Just for clarification, it's the
12 transportation agreement not a supply agreement. But in
13 the FERC application that was an appendix to our
14 submittal to this Committee, this is Volume I of II.
15 Exhibit I is the preceding agreement that we entered
16 into with AES and it's dated the 8th of December of 1999.

17 Q Landowner access, currently we have an existing pipeline
18 that has access for people to be able to access either
19 back land. I believe it's the intent of the Applicant
20 that all such access and egress will remain after the
21 new pipeline is constructed?

22 A (By Mr. Kleinhenz) That is correct.

23 Q We also talked, a little bit, about dead spots in the
24 line. And I think we touched on this somewhere in the

1 conversation for low flows, the fact that the proposed
2 pipeline is a radial line where you're always taking gas
3 at the other end would be a factor that you would not
4 get low flow conditions as you might in a networked area
5 where flows could balance. Was that what you were
6 trying to get across?

7 A Exactly.

8 Q And does the fact that the pipeline follows the river
9 help on the dead spots because my geography says rivers
10 flow downhill. So when you come up the Merrimack River
11 you're climbing a couple of hundred feet. I realize
12 that pipelines can vary from the depth that they were
13 installed. They may not be flat. But, in general, this
14 pipeline would seem to have the liquids, a rollback, to
15 Dracut somehow. Does that actually occur in real life?

16 A I'm not sure about that. I do know that, obviously, the
17 volume of gas is still pushing it and it can push the
18 liquids up in a low spot like that. Our main concern
19 with low spots is where you do not have adequate flow.

20 Q Let's go to the diagram that's still up on the board.
21 I notice that the Applicant had a willingness to move
22 the red line to the left?

23 A Yes, it was moved approximately, it looks like, 80 to
24 100 feet.

1 Q How long of a left arm do you have?

2 A I'm sorry?

3 Q How long of a left arm do you have? Here's what I'm
4 getting at. In terms of growth, people have some real
5 concerns for pipelines in the areas of the school and
6 the public gathering area that you mentioned. Would the
7 Applicant be willing to apply the federal criteria to
8 the school property boundaries, 300 feet to the --

9 A I'm not sure where the --

10 Q What I'm trying to pick up is if somebody builds a new
11 soccer field, if we go above the circular ring that we
12 have there today, if that's still school property and it
13 has room to build some type of a, another baseball
14 field, that we would still have that protective Class 3
15 pipe?

16 A Where's the property line? This is definitely the
17 property.

18 Q Right. And I think you used as a basis the existing
19 facilities. All I was trying to do was allow for future
20 growth on existing school property, if we could use 300
21 feet from the existing boundaries?

22 A From this down to here?

23 A (By Mr. Hamarich) Three hundred feet back from the
24 school?

1 Q From the property boundary.

2 A (By Mr. Hamarich) We'd be willing to -- If it's not
3 already incorporated in the design?

4 Q Right.

5 A Both schools, Pelham and Londonderry?

6 Q All the schools and the one public gathering area that
7 you've --

8 A All the schools and the public gathering area. We'd be
9 willing to go into those areas, find the limits of those
10 areas, and the town controlled, those gathering areas,
11 and extend 300 feet before entering and leaving those
12 with a Class 3 pipe, the school properties and Muldoon
13 Park area. And that means even if we cross the road
14 we'd go 300 feet from them on that with that wall
15 thickness pipe.

16 Q Three hundred feet, okay.

17 A And I want to add that there's other areas along the
18 route that we've done similar things for projected
19 growth.

20 Q In agreeing with one of the later provisions from the
21 PUC safety division, I believe you came up with a figure
22 of \$28,500?

23 A Those were the calculations made, based on our meetings
24 earlier in the year, based on some numbers of shared

1 costs that estimated so much a month, and estimated so
2 many months of construction, and picking up a certain
3 percentage of that and that OPS picks up the other
4 percentage. That was a calculation given based on our
5 earlier discussions, that type of an arrangement.

6 Q Would it be the Applicant's intent that they would fund
7 that inspector whose current cost is currently estimated
8 at \$29,2000?

9 A Exactly.

10 Q And I don't want to create a problem where we hard wire
11 --

12 A Just, on the record, there's a certain percentage,
13 there's a certain direct cost to you, to the PUC, to pay
14 that person. So if you would happen to give this person
15 a raise then that would be incorporated in. If the
16 construction goes longer or shorter, that would be in
17 the factor. I just wanted those parameters there as
18 part of the formula.

19 ATTORNEY V. IACOPINO: Are you advocating a
20 raise?

21 A Well, nobody ever has enough.

22 Q There was one other patrol that takes place that I
23 didn't hear mentioned. And this is not a company
24 control but, at least in the electric industry,

1 vegetation control is done along electric rights-of-ways
2 and those people are trained to report abnormalities or
3 things that they see back to the Company so they can be
4 rectified. Now, from my understanding as on gas
5 pipelines, you don't use machines to control vegetation.
6 A lot of it's hand control. Is there a process in place
7 whereby if these people saw pipe exposed, or they saw
8 something, that they would report it back to Tennessee
9 and then the proper maintenance procedures would take
10 place?

11 A Yeah, we've got that for employees and it's in the
12 property owner information and the public information.
13 If any of these things are noticed by the public they're
14 supposed to call that back, plus the property owners.
15 It explains discolor and vegetation and contractors, and
16 things like that. So it's part of the public awareness
17 information that goes out to explain the properties of
18 the pipeline easement.

19 Q There was a line of questioning which did not seem to go
20 too far on the area of destruction should a violent
21 pipeline explosion occur. If the design parameters that
22 this country used for siting gas pipelines was that you
23 had to be the blast difference or the zone of
24 destruction difference, how many people would have gas

1 in the United States? Would we have gas in any of the
2 cities?

3 A (By Mr. Kleinhenz) If you're asking if we try to route
4 the pipelines to completely avoid every dwelling, in
5 other words, to avoid the "rupture zone," is that what
6 you're --

7 Q Yes, whatever that is. We can't --

8 A It's not possible. It is feasibly impossible.

9 Q And we wouldn't have gas in our major cities?

10 A That is correct.

11 A (By Mr. Hamarich) And let me just add on that, one of
12 the things is -- Well, I'll leave it at that.

13 Q Third party contractors, there was a discussion, Mr.
14 Hamarich, that you had whereby you identified the people
15 that work for you as third party contractors. Now, if
16 you were to look at third party damage and then say what
17 portion of the majority damage done by third parties is
18 done by contractors that work for the gas company?

19 A Very few natural gas transmission pipelines because most
20 of the damages are done by contractors, not to knock any
21 other industries but, road contractors, sewer
22 contractors, private developers, fiber optics
23 contractors. Pipeline contractors, because of the
24 nature of the business and the quality control on the

1 specifications, I would have to say that it's a very
2 small percentage of that third party damages.

3 Q Because they're not under your control and you keep
4 everything marked for the contractors that you have
5 under your control?

6 A Yes. And even if other pipeline contractors our
7 crossing us they've got the same stipulations, other
8 natural gas contractors. So it's been a more --

9 Q So they need clearance, is that what you're saying?

10 A Yeah, they need clearance from us --

11 Q They need clearance to work on your facilities?

12 A And it's been a more controllable situation in the
13 industry.

14 A (By Mr. Kleinhenz) In general, these damages are done
15 by people who violate the one-to-call system.

16 Q We also talked about --

17 MS. BROCKWAY: You mean the Dig-Safe
18 system?

19 A (By Mr. Kleinhenz) Exactly.

20 Q You mentioned that there was a meeting last May where
21 you invited communities with regard to, I believe it was
22 safety matters? It was in Manchester?

23 A (By Mr. Hamarich) The public awareness meeting by our
24 operations out of Hopkinton. I think that's one meeting

1 we mentioned. That was an operations meeting. I don't
2 know if it was in May.

3 Q There was a meeting referred to in May and the statement
4 was that some communities chose not to attend?

5 A Oh, that was -- Yeah, that was -- My information from
6 Dick Jasmin, our operations manager in Hopkinton, was
7 that there was a meeting in Manchester for all the
8 communities in New Hampshire. They do three or four
9 meetings in Massachusetts, regional meetings, and then
10 one here in New Hampshire, and all the communities are
11 invited to do the annual emergency response program,
12 public awareness program.

13 Q Could you supply this Committee with the communities
14 that chose not to attend?

15 A Yes, I can follow up with that information.

16 Q You also talked about how careful you refill the trench
17 and how you place your rocks. What if you have rocks
18 left over that don't fit in the trench? Do they get
19 left on the right-of-way or is the extra spoils cut off?

20 A I tell you, we try not to -- We try to limit the hauling
21 of the rock away from the right-of-way. We try to work
22 with landowners and try to be able to -- First off, we'd
23 like to work the rock into the cuts and fills in the
24 trench but not over the pipeline. Then we try to work

1 the rock into the areas of the natural landscape,
2 putting up -- We use it to make barricades. Some of the
3 landowners might want barricades across the right-of-way
4 to prevent four-wheel drives or four-wheelers, I guess
5 it is, things like that. And then, as a last resort,
6 the last option, if there's nowhere else to put, is to
7 haul it away. But we really don't like to commit to
8 hauling it away and we've got provisions in our ECP
9 plan, Environmental Construction Plan, on how we can
10 dispose of that rock.

11 If you do get in a high rock area, you do have a
12 possibility of having to haul that but that's not our
13 intent on this project. We feel that we should be able
14 to build it and dispose of the rock in a proper manner.

15 Q So when you leave the right-of-way, in terms of rock,
16 the landowner should be happy?

17 A The landowner will have to be satisfied to that and also
18 in compliance -- Yes.

19 CHAIR: Brook?

20 MR. DUPEE: Thank you, Mr.
21 Chairman.

22 **EXAMINATION BY COMMISSIONER DUPEE:**

23 Q Just a couple of questions. You talked about the gas
24 supply that comes into Dracut but could you tell me

1 where the current gas supply comes from again?

2 A Do you want to do that Rob? Where's Rob? Is he here?

3 Let Rob hit it this time again. I tried to paraphrase
4 him last time.

5 A (By Mr. Haas) In general, our system in New Hampshire
6 is spent from two primary sources, one is Tennessee
7 System Upstream and the new connection with Maritimes in
8 Portland. Portland has been in since '99 and Maritimes
9 which actually came online in 2000. Maritimes being
10 Sable Island. Portland being Western Canadian Supply.
11 Tennessee Upstream is a variety of sources, plus we also
12 get some gas from Distra Gas which is LNG, primarily,
13 from (inaudible).

14 Q You mentioned that one of the reasons why the gas is so
15 dry in New Hampshire is that it comes from a long ways
16 away and there are a series of filters that happen along
17 the way. And this still will be true with the
18 additional gas that will be coming through this new
19 pipeline? That same criteria will be there?

20 A Yes. We have pipeline quality specifications for any
21 interconnection. And, as Mark mentioned, we're adding
22 gas chromatographs as these new interconnections come
23 online. For example, we connected to Distra Gas in 1998
24 and we put a chromatograph in so that we could monitor

1 it. When Maritimes connected we required them to put a
2 chromatograph there. And we've added additional ones in
3 other locations because of the new dynamics of the gas
4 entering our system in New England.

5 Q And there still are those filters, etc., from somewhere
6 between the source of the gas to where it enters this
7 particular system here?

8 A Correct.

9 Q Also, I heard testimony yesterday and today regarding
10 materials in the gas that have been described as
11 impurities, liquids. Could someone give me a little
12 more description as to what those impurities are, what
13 kind of liquids you were referring to? I understand
14 water, certainly, but if you could go on that would be
15 helpful to me.

16 A (By Mr. Richardson) Water, moisture, in the form of
17 water vapor usually.

18 CHAIR: Take your hand off the
19 base.

20 MR. RICHARDSON: Oh, was I --

21 CHAIR: There you go.

22 MR. RICHARDSON: Okay, we'll try to
23 balance it but.

24 A Moisture in the form of water vapor is the most

1 important one because without that none of the other
2 impurities take action. It leads to the same point,
3 internal corrosion, so that's one of the major ones
4 we're looking at. Their specs, I believe, are seven
5 pounds per million cubic feet, and we've monitored that
6 for years and it will continue to be monitored. It's a
7 very important one to keep internal corrosion from
8 occurring. The other constituents that can contribute
9 and take the water vapor being there, but they're also
10 impurities that can show up in the gas stream, include
11 such things as sulphur, in a number of different forms.
12 It can be free sulphur or iron sulfide at times. And,
13 as a matter of fact, sulphur will sometimes show up as
14 iron sulfide in the pipeline if there's very little
15 moisture but a slight amount. It's kind of like a form
16 of interior rust as versus exterior rust. It's not
17 where it hits the pipe but it will form a sulphide along
18 the pipe wall. Carbon monoxide and carbon dioxide are
19 both impurities.

20 In certain instances, along with water vapor, they
21 can create carbonic acid, is it? Is that -- I believe
22 it's carbonic acid. Sulphur, of course, can create
23 sulphuric or sulfurous acid, either one. And those are
24 the primary ones. There's also such things as drilling

1 mud that you get down in the supply areas off the Gulf
2 Coast and things of that nature. These aren't usually
3 contributors to interior corrosion but they do cause
4 problems in the pipeline.

5 Q Thank you.

6 MR. DUPEE: Chairman, one more
7 question?

8 CHAIR: Sure.

9 Q Is it expected that the source of these materials, or
10 the amount of these materials, will not vary because of
11 the new sources of gas that have come online in the last
12 year or so?

13 A (By Mr. Kleinhenz) That's correct.

14 Q Thank you. No further questions.

15 CHAIR: Jeff?

16 **EXAMINATION BY COMMISSIONER TAYLOR:**

17 Q Just a few questions related to operational concerns.
18 Early on Mr. Haas stated that there had been no, I
19 believe he phrased it, major incidents since the first
20 line was put in operation in 1952, and that's certainly
21 an admirable objective. But I guess I'd like to probe
22 a little bit deeper and see if there are minor
23 incidents. And I wonder if anyone could speak to or if
24 you could provide information to us about any

1 unscheduled non maintenance reductions in service on
2 either the eight or the 12 inch line say over the last
3 five years, things that might relate to equipment
4 failure or quality of the gas or any incidents that did
5 involve a third party operator who had somehow damaged
6 the pipe or the valves or some element of the system?

7 A (By Mr. Hamarich) In regards to the second part of the
8 question, and I would have to, due to my knowledge and
9 discussions with our operations people in reviewing the
10 events, there's been no loss of service due to non
11 scheduled maintenance or due to any disruption in the
12 service to a third party damage, or anything like that,
13 on the system over at least the last five years and then
14 some. It's been a very reliable system in this area.
15 As far as the incidents, I think this is a good point.
16 We said there's been no major incidences. I testified
17 at the hearings in April in Pelham and Londonderry that
18 I did not know of any incidences on that. Since that
19 time I've found some information. There's been five
20 leaks that have been, actually six leaks that have been
21 identified on this system. I believe this same
22 information that I've got was faxed to Mr. Marini at the
23 PUC at his request. I received that same information
24 from our area operations, our division operations, in

1 Enfield, Connecticut.

2 I will tell you that every one of the leaks were
3 attributed to construction. We talked about
4 construction defects. Every one of these leaks was on
5 either the eight inch or the six inch pipeline that was
6 built in 1951, so we're going back to the original line,
7 every one of them, the first five, and they were in
8 1952, 1971, 1971, 1960 and 1962. So we're dating back
9 before this line. This line was hydrostatically tested
10 in 1982 but they were all in faulty welds. I don't have
11 any other information on that. I would assume that a
12 leak developed in the welds. Today we do 100
13 percent X-ray, which those lines probably weren't 100
14 percent X-rayed to look for any kind of defect in the
15 weld. We also do a strength test for hydrostatic
16 testing, which we may or may not. At that time we
17 didn't hydrostatically test it when it was new. So
18 those were pre-1971 leaks. I will say the third leak,
19 the most recent leak -- Now those leaks, one was in the
20 Town of Pelham, one was in the Town of Londonderry and
21 -- Actually, two in the Town of Londonderry, one in the
22 Town of Manchester, one in the Town of Hooksett. The
23 one in Londonderry is the only one that affects, and
24 Pelham, were 1952 and then 1971. There was a leak

1 reported in the Town of Hooksett in 1982, and what that
2 was -- In 1982 we hydrostatically tested the pipeline
3 and we found the pinhole in the weld. So one could
4 assume if the others had been hydrostatically tested we
5 may have found those leaks during the installation of
6 the pipeline as opposed to later on in years. So --

7 Q Nothing since 1982, is that --

8 A Nothing since 1982. But just for the record, we say no
9 major incidences, there has been five leaks, all in
10 welds, all attributed to construction, girth weld I
11 should say, and both our welding procedures and
12 destructive testing have been improved since that time.
13 But none due to corrosion, or anything like that.

14 Q Alright, thank you. I have one blasting question for
15 Mr. Kretschmer. As I understand your role, both on this
16 project and a variety of previous projects with
17 Tennessee Natural Gas, you have both approved the
18 blasting plan and supervised and monitored the actual
19 blasting activity, is that correct?

20 A (By Mr. Kretschmer) We have reviewed the blasting plan
21 and then also monitored. We don't do any supervision.
22

23 Q Very good. Has the four inch per second standard been
24 a component of any of the projects that you have worked

1 on?

2 A That's a standard Tennessee Gas component, yes.

3 Q And in your observations and your monitoring efforts,
4 has that standard been abided by 100 percent of the time
5 or most of the time or what --

6 A That is a standard that was attempted to be obtained.
7 There were times when the standard was exceeded and the
8 blast plan reviewed and those blasts brought back into
9 compliance through changing of the blast plan and
10 covering, etc.

11 Q Could you characterize the frequency with which those
12 blast standards were exceeded?

13 A Oh, it was very few times at the beginning of one
14 project. I don't even know -- To be honest with you, I
15 don't know if it was a Tennessee Gas project. It was a
16 project over in Greenland, New Hampshire. There was --
17 They exceeded those limits on an existing pipeline, and
18 it was reviewed. The situation there was too much cover
19 and not enough explosive in the ground causing high
20 vibrations. When those things were changed and
21 adjusted, the vibrations fell back into line.

22 Q Perhaps you could check and let the Committee know
23 whether that was a Tennessee project or not?

24 A I could do that, yes.

1 Q Thank you.

2 **EXAMINATION BY COMMISSIONER BROCKWAY:**

3 Q Good afternoon gentlemen. I will also be bouncing
4 around because you've covered most of what I had hoped
5 to ask for, one way or another, with other questioners.
6 In colloquy with counsel for the Town and the district,
7 there was an effort to get the panel to opine about the
8 maximum distance at which damage could be done, and the
9 maximum amount of damage. And my notes have it that you
10 never really did answer the question, and it may be
11 because you can't answer the question or it's not
12 answerable. But can we try it again? I think the
13 question was something to the effect of, "Assume a
14 catastrophic failure in the pipe. How far away could,
15 hypothetically, could damage occur?"

16 A (By Mr. Hamarich) I think that the reason that's so
17 difficult to answer is catastrophic, if it's a small --
18 Say it's a rupture -- Let's assume it's a rupture and
19 it's released the gas. If it's released through a small
20 area of the pipe or a large area of the pipe, what is
21 the operating pressure at that time? What are the other
22 conditions? What is the soil overburden? How much
23 cover, the rock there?

24 Q Can you assume --

1 A So it's really going to be --

2 Q The worst case?

3 A Even worse, it's really going to be hard to determine
4 that, to make a statement on that.

5 Q I respect that you don't want to unduly frighten people.

6 A Right.

7 Q And I'm not trying to get you to do that. But I have to
8 say that it was troubling that you didn't answer the
9 question --

10 A (By Mr. Kleinhenz) It's difficult --

11 Q And I would like to see if you could try?

12 A (By Mr. Kleinhenz) As engineers, neither one of us have
13 ever worked on damage assessment for a pipeline. And so
14 it's really out of our realm in terms of that and that's
15 why -- I've never been involved with investigation, I
16 don't believe Mark has either, in terms of making damage
17 assessment. I don't know if that helps any.

18 Q Is it possible to provide that answer at a later time
19 from some other resource within the Company?

20 A I don't know if the research has been done. I don't
21 know. If there's something available that the industry
22 has conducted, I would be glad to supply that. I don't
23 see a problem with that.

24 A (By Mr. Richardson) I can help you directly to answer

1 the question that you won't. But let me tell you, I
2 have been there shortly after accidents have occurred
3 and there's a lot of reasons why it's so difficult. But
4 when a leak is involved, this isn't usually what you're
5 concerned with. However, if that leak were to fill a
6 building, for instance, it could be devastating because
7 the building would light off and the gas wouldn't be
8 able to escape. That's a bad situation. If you have a
9 pipeline rupture out in the middle of the King Ranch or
10 -- Most of the time, in New Mexico, it's out in the open
11 and you're not going to do anything. There won't be
12 anyone there to hurt. But the Carlsbad event was a very
13 unfortunate event. It happened when some people were
14 there in a very sparse area and they were too close to
15 the pipeline and bad things happened to them. The
16 pipeline, when it ruptures, will unzip for a distance,
17 and the direction the gas goes out of the pipeline will
18 determine what is damaged and it's in the direction it's
19 going. Other buildings and people that are beside that
20 area are likely not to be hurt unless the pipeline
21 lights off. When the pipeline lights off, we could give
22 you figures on the radiant energy that occurs from the
23 plume. And you're right, the plume goes way up.
24 Luckily it does go up because as it's going up and

1 burning that protects the surface area around it
2 bringing in air to go up with that flame.

3 Q Creates a draft?

4 A It creates a draft, yes. And -- Each one of them is
5 different. I saw one that burned down an orange grove
6 in Louisiana one time. It didn't hurt anybody. It
7 burned up an awfully nice grove of orange trees. And
8 you could see the path that the gas was going out of the
9 pipeline and it did light off and it burned those orange
10 trees. Some don't light off. It just depends on what's
11 there, where the event occurs, how the steel tears and
12 the nozzle effect that's left when the pipeline is
13 blowing down. And it's awfully difficult to even deal
14 with a worst case situation there, to predict one,
15 that's what I'm trying to say.

16 Q My sense of where things are, at this point, is that you
17 all have done a lot of work in describing the measures
18 that you would take to make sure nothing like that ever
19 happened. I guess, because the question was asked by
20 the Town or the district, I have to credit that there
21 might be more a feeling of confidence in all of these
22 measures that you've been taking if they were not, by
23 implication, left thinking that, "Well, there, there,
24 don't worry. It's never going to happen." I'm not sure

1 I have a question about that but I --

2 A (By Mr. Richardson) May I try to help you there? Our
3 feeling is let's do everything we can to keep that from
4 happening, and that's what we're doing. That's what
5 Mark's approach has been. If it were to happen, it
6 would be a terrible event. If an airplane falls out of
7 the sky, what's the worst event that could occur there?
8 Does it hit a neighborhood? Is it just the people on
9 board that get killed or the ones on the ground? Does
10 it fall into an apartment house or a ten story building?
11 It really depends on the circumstances, and this is very
12 similar to that. If it falls out in the middle of the
13 King Ranch it's not going to make a bit of difference.
14 It may get a --

15 Q Well, this pipeline is right next to a school. I think
16 that's one of the reasons why people are concerned.

17 A Well, at one point it is. And we're putting in extra
18 heavy pipe there to protect that school from the
19 possibility that anything could occur.

20 Q I'd like to go through with you a series of pipeline
21 accidents. And I actually, coincidentally, got this
22 information because I was sent a report "Consequences of
23 a Natural Gas Dependency for New England's Electricity
24 Supply," which is a publication prepared by Energy

1 Ventures Analysis in Arlington, Virginia. And if you
2 read it, the gist of it, reading through the lines I
3 think they must be working for the coal industry. But,
4 in any event, they do, at pages 3-4 to 3-5, list a
5 number of problems with explosions, or other problems
6 with natural gas supply, leading up to the idea that
7 reliability would be a problem, a separate issue but.

8 We talked about El Paso, excuse me, Carlsbad, and
9 we talked a little bit about Edison, New Jersey, and I
10 appreciate that Mr. Cannata asked that question because
11 I had that question, but I want to briefly run through
12 these. And to the extent that you know about these
13 incidents, if you could describe, briefly, to what
14 extent what happened in those incidents could happen
15 here or why this situation is or is not different and,
16 if it is the same, what steps are taken here to prevent
17 it? Not to belabor points that you've gone over many,
18 many times, but just briefly. El Paso Natural Gas,
19 we've done that one. The Perry Compressor Station on
20 the Florida gas transmission system, a lightning strike
21 on August 15, 1988. Do you have any information about
22 that?

23 A (By Mr. Kleinhenz) No.

24 Q Algonquin, a bulldozer operated by a third party

1 damaging the Algonquin system on December 9, 1995 with
2 line pressure reductions affecting the Manchester Street
3 Power Plant, which I think is in Rhode Island?

4 A (By Mr. Kleinhenz) That would, obviously, be a third
5 party damage. That's pretty self-explanatory, a dozer
6 got --

7 Q I'm not actually asking for the reason for it so much
8 as, what assurances do we have that that type of thing
9 won't happen here?

10 A (By Mr. Hamarich) Let me go back to the first one, that
11 we didn't know about the lightning strike, okay? That
12 goes back to the forces of nature and an act of God. I
13 don't know the specifics but I can't control lightning,
14 per se, but --

15 Q The last I heard nature and, for those who are
16 believers, God, were still both operating in New
17 England?

18 A Okay. But, let me just say, in our meter stations and
19 above ground (inaudible) we have lightning arresters,
20 and things, when lightening hits in the whole electrical
21 grid. It's grounded and it's designed to try to prevent
22 that. And things underground, of course, are not really
23 subject to some of that. The second is third party.
24 And we stress that a lot about patrolling the pipeline

1 and working the Dig-Safe issues and making sure the
2 pipe's deep enough in roads, got the concrete coating,
3 and that we protect our easement, that we mark and
4 protect our easement, and every effort to prevent that
5 third party type damage.

6 Q Okay. I'm not sure how to characterize these. This
7 report indicates that between 1995 and 1997 there were
8 five explosions and/or fires on the Trans-Canada
9 pipeline, the most significant of these in 1995 near
10 Rapid City, Manitoba where an explosion took out six
11 pipelines and two units at a compressor station.

12 A (By Mr. Hamarich) Do you have the cause of that?
13 Again, we're looking at cause. I don't --

14 Q No, I don't.

15 A I don't know.

16 Q Okay. Nineteen ninety-four, in October, heavy rains in
17 the Houston, Texas area, that's your hometown, flooding
18 that caused pipelines to be ruptured and others to be
19 undermined?

20 A Yeah. And as we discussed in our earlier testimony, as
21 far as designing this, we've got two pipelines in the
22 ground. We pretty much know the drainage activity,
23 where the erosion problems have been, if there's been
24 any. That's one of the reasons earlier that we looked

1 at this eight inch line that we're taking off and, due
2 to concerns with instability of slopes and erosion and
3 things like that, we're going to not put the 20 inch in
4 that same alignment. We're going to move it that
5 approximate 60 feet from the right-of-way. And our
6 depths and rivers and such, are designed to assure the
7 stability of that. And again, the soil conditions in
8 Houston and the rain events in Houston are a lot
9 different than in New Hampshire.

10 A (By Mr. Richardson) Besides that, that was a gasoline
11 pipeline that did the damage there not a natural gas
12 pipeline.

13 A (By Mr. Hamarich) We did talk about the difference
14 between gasoline and natural gas but --

15 Q Yeah, it does say here --

16 A Gasoline --

17 Q "The incident affected both oil and natural gas
18 pipelines." And the last was Edison, New Jersey, and I
19 think you discussed that already. Again, along the
20 lines if I were trying to imagine what kind of risk I
21 might be exposed to if I was living near there, we're
22 near a school. You get school kids, pranks, perhaps
23 youthful carelessness. Is there any risk that kids
24 could do something to the pipeline that would cause a

1 problem?

2 A (By Mr. Kleinhenz) No.

3 A (By Mr. Hamarich) Unless they dig down without calling
4 Dig-Safe. Really, seriously, we've had events near the
5 school where there's been activity where they've been
6 clearing trees and properties. And we've actually had,
7 in Londonderry, the schools have activity over our
8 pipelines without calling us. So, hopefully, if they're
9 aware through our public awareness, which we're trying
10 to maintain now, that the pipelines are there, that risk
11 won't increase any with a new pipeline there and, in
12 fact, should decrease because of the public awareness of
13 where that pipeline is, what it's about.

14 Q But a bunch of kids unsupervised, after school, --

15 A That's very -- There's nothing -- Kids aren't going to
16 do anything. They're not going to do anything.

17 Q Unless they happen to borrow dad's backhoe or something?

18 A Backhoe, that's what I was getting at.

19 A (By Mr. Richardson) That probably shouldn't be allowed
20 on the school property.

21 A (By Mr. Hamarich) And --

22 Q Go ahead.

23 A Well -- And, again, of all places, we would hope that
24 the easement through the school could be controlled as

1 well as anywhere because this is it. And through public
2 awareness and education "This is the pipeline and here
3 it is." So, there shouldn't be any excavation or
4 anything on there. I'm going back to excavations.

5 Q Again, that I think we've covered. I was talking about
6 more about if -- I was trying to imagine if I lived
7 right near there what I would be worried about. And not
8 knowing anything about pipeline engineering, I would be
9 worried about a bunch of kids being able to change a
10 framus or a gizmo and all of a sudden there's a problem?

11 A (By Mr. Hamarich) No, there's nothing there.

12 Q This goes to the gentleman who was talking about
13 blasting and elasticity. I think you've covered this
14 but just to make -- And I think it may be covered by the
15 heating agreement that you've talked about but, how do
16 you know something's elastic, that once it pushes in a
17 certain direction it won't just stay in that out of
18 place direction?

19 A (By Mr. Kretschmer) It's all elastic, and everything
20 has a certain elasticity to it. And that's just part of
21 physics. And that would be in the realm of God.

22 Q Is it fair to say that when you're setting the
23 parameters for the blast you take into consideration the
24 physics of whatever the materials are that are in the

1 place where you're trying to blast?

2 A Yes, absolutely.

3 Q And different materials would have different parameters
4 for elasticity and you would adjust it accordingly?

5 A Yes.

6 Q I think those are all my questions. Thank you very
7 much.

8 CHAIR: Susan?

9 **EXAMINATION BY COMMISSIONER GEIGER:**

10 Q We've heard a lot of testimony over the last almost two
11 days now concerning the construction of the first
12 pipeline. And I have a question that I don't think has
13 been addressed yet, and that concerns the specific steps
14 that will be taken to remove the eight inch pipe from
15 service? Specifically, I'm concerned about what safety
16 issues might arise or might attend that particular
17 function? And if you could describe for me what that
18 process would entail and any particular risks that are
19 associated with it, and what steps will be taken to
20 address those risks?

21 A (By Mr. Kleinhenz) Obviously, prior to any excavation,
22 the eight inch will be shut in. And that's a term,
23 basically, isolating that portion of the pipeline. And
24 then the gas will be released and purged so all the gas

1 is removed from the pipeline.

2 Q Do they do that with air or water?

3 A They would do this probably with air.

4 Q Okay.

5 A Yeah, air purging. And so, prior to any excavation it
6 would be purged and verified by instrumentation that
7 there is no combustible gasses in there. And once that
8 has been done than the excavation of the eight inch
9 would take place.

10 Q Would you be excavating segments of the eight inch pipe
11 and then contemporaneously, or shortly thereafter,
12 putting in the 20 inch or how will that be accomplished?

13 A There would be a very -- In open areas what would most
14 likely happen is a contractor would go through and he
15 would actually take out the eight inch and then put the
16 material back in. And then as the ditch crew came back
17 in then they would re-dig the ditch. In other areas,
18 like in a residential area, it would be done all in one
19 swoop, and that would obviously ensure that we would
20 have it done in a much quicker manner. It would be what
21 we would call a drag section-type construction. So,
22 again, it would be to the discretion of the contractor
23 with that, although there would be stipulations in
24 residential areas that he would not be able to leave the

1 pipe exposed. And he would do that in a 24-hour period.

2 Q And when the pipe is purged and the existing gas of the
3 eight inch pipe is released into the air, what personnel
4 are around that activity and what steps are taken to
5 make sure that there's no emission at that point?

6 A That's our operations personnel that would be there so
7 that would involve our company personnel as well.

8 Q And what exactly do they do? They just -- Do they
9 observe, do they -- Is there any instrumentation or any
10 devices that measure the actual release of the gas at
11 that point or --

12 A (By Mr. Hamarich) Yeah, it's a controlled release at
13 certain points. At our main line valve locations we
14 have blow off valves also, and those blow off valves are
15 what we use to control the release of gas. Our
16 operations people control all the gas on the pipeline.
17 They will do two things. They will put a silencer
18 because gas will make noise. They will put a silencer.
19 Also -- So, it's a controlled release. So the chance of
20 any type of ignition, or whatever, that's controlled
21 because the area is controlled as to where the gas is
22 venting, where these blow offs are located and where the
23 gas is venting to. Prior to any release of gas the
24 local community, the fire and whatnot, are notified

1 because there's still some noise associated with it, not
2 as much with the silencer. But as we talked about
3 earlier, the gas does have an odor here and the fire or
4 local response teams are going to be getting calls,
5 "Hey, there's a smell of gas in the air" for this short
6 time. So that's notified. And then the immediate
7 landowners in the vicinity are also notified of that
8 release of gas.

9 So it's a -- In fact, we're doing some maintenance
10 work on two pipelines in New Hampshire at this time and
11 we'll have to release gas for a section of the eight
12 inch and a section of the 12 inch near Manchester.

13 Q Okay, thank you. The other question I have concerns the
14 Dig-Safe program and your participation in that program.
15 In the future, assuming that the certificate is granted
16 and the pipeline is installed, or even currently with
17 the two pipelines that you have in the current corridor,
18 when construction is being contemplated in that area and
19 a call to Dig-Safe is made by your company or you're
20 informed by Dig-Safe that there's going to be
21 construction occurring in that area, does Tennessee
22 itself actually go out and mark those two pipelines or
23 do you hire a third party to mark those pipelines?

24 A Okay, I can't speak directly for operations. The normal

1 is that it's a Tennessee Gas employee that marks that
2 location. It is a --

3 Q When you say 'that location', do you mean the corridor
4 or do you actually mark the two separate pipelines?

5 A We mark the pipeline and dependent on where the activity
6 is, you may have to stay and observe any -- If there's
7 going to be true excavation there you mark the location
8 of the pipeline. When you're asking third party, what
9 I want to say is our operations people may have someone
10 under contract for Tennessee Gas that, if you research
11 back, they're working in our operations area and they
12 may be on contract doing that job. I just want to
13 clarify that. But we don't have a company on retainer
14 in Concord, or these other places, that you go out and
15 do it. That's a Tennessee Gas responsibility that comes
16 into the area. And that's a well controlled process of
17 marking and working with developers and such.

18 Q And what is your standard operating procedure for
19 marking the lines? Do you use flagging? Do you use
20 chalk on concrete? Do you spray paint? How do you do
21 that?

22 A Well, the permanent markings now, of course, are marker
23 posts and at the roads we've got circles. I'm not so
24 sure what they're using here. I'm not sure if they're

1 using stakes or they're using spray paint or what. I
2 can't tell you. It varies in different locations. A
3 lot of what's standard is these metal flags they'll do.
4 Some will be a combination of that and paint. It used
5 to be wood stakes and flags but it's gotten more to this
6 marking. So I couldn't say, particularly, in this
7 operating area what is used.

8 Q Okay, thank you. The final question that I have really
9 relates to some questions Mr. Cannata asked and it also
10 relates to the chart that's been put up on the easel.
11 Last week, late last week, I received a filing from the
12 Company that contained some similar charts, one of which
13 is marked "Sheet 13 of 13" which purports to be a
14 response to a FERC data request. And I was wondering if
15 you could tell me whether or not this particular map
16 corresponds to the one that's up on the easel?

17 A (By Mr. Kleinhenz) Could I see it?

18 Q It was in the filing that was made last week. It was
19 with a bunch of similar aerial photographs.

20 A Right. That's just a piece, or a section, taken out of
21 the current route map and then it's reflecting an
22 alternate that was asked by FERC for us to review.

23 Q And what did you tell FERC in response to your review of
24 that alternate that FERC requested that you undertake?

1 A They asked for specific parameters and information
2 regarding the alternate. And if you'd like, I can --
3 Well, let me just explain the parameters that FERC had
4 requested for us to look at in terms of these
5 alternates.

6 ATTORNEY SMITH: For the record, we're
7 referring to Exhibit A-59.

8 Q Thank you.

9 A (By Mr. Kleinhenz) And, more or less, what it is is a
10 comparison analysis of the existing route versus a
11 potential alternate. And we were asked to provide the
12 length of pipeline, the acreage, both permanent
13 construction and right-of-ways that would be impacted,
14 the size and location of non-typical work areas, the
15 number of residences within 50 feet of the construction
16 right-of-way, water body crossings affected, wetland
17 crossings, agricultural and affected forested lands
18 affected, and if it was parallel to any existing right-
19 of-ways and then the estimated cost.

20 Q And what were your conclusions about installing this
21 section of the proposed pipeline along the FERC
22 suggested alternate route?

23 A Oh, I'm sorry, I apologize. I didn't hear your
24 question.

1 Q I think I understand from materials that I've seen in
2 the filing the list of information that you provided to
3 FERC. The question that I have for you is, what is the
4 Company's position or conclusion with respect to
5 actually siting this piece of the proposed 20 inch line
6 in that specific alternative suggested by FERC?

7 A (By Mr. Hamarich) I'll take that one. We supplied the
8 information to FERC. Our recommendation is -- Our
9 preferred route has been within the existing corridor
10 along the 12 inch because the 12 inch will stay in
11 place. We submitted this information to FERC. FERC
12 published a draft environmental assessment, I think it's
13 Exhibit A-76, and in that draft environmental assessment
14 they supported the location of the pipeline as proposed
15 in the application along the 20 inch. We did not make
16 judgment. We told them what -- They knew what our
17 preferred route was because we filed, we did this
18 analysis, and basically FERC supported those
19 alternative. They supported the location of our
20 pipeline as planned and proposed near the 12 inch.

21 CHAIR: Thank you. Others on
22 the Committee before I go back to Mike? I have a couple
23 myself.

24

1 **EXAMINATION BY CHAIR:**

2 Q You referred to the 1982 pinhole leak in Hooksett. How
3 did the Company identify that pinhole leak?

4 A (By Mr. Hamarich) It was on the hydrostatic test. I
5 don't have -- I'm assuming they were losing pressure and
6 went out and identified that leak. That's normally what
7 happens at a test, on a strength test. If you lose
8 pressure, and all the conditions are right, you should
9 be able to hold pressure on the pipeline. If you're
10 losing pressure over a period of eight hours that is not
11 normal to temperature deviations, you can -- I'm
12 assuming that's how it was found.

13 Q The pinhole leak then, are you suggesting suddenly
14 occurred, suddenly resulted in the loss of pressure, or
15 was this a pinhole leak that was associated with
16 construction that was always there as a small leak that
17 was then picked up?

18 A Our assessment, based on this information that I'm
19 looking at, is that it was probably, since it's
20 attributed to construction, it was probably there. It
21 may not have been -- The testing may have forced the
22 leak larger. The leak could be so small there could be
23 gravel -- It was in the Manchester -- I'm not saying it
24 was in Manchester Sand & Gravel but I've seen it where

1 you've actually got, it's so small and it's such a small
2 cross-sectional area, it doesn't take much held together
3 -- Welder's scale, it could be welder's scale, or
4 something like that, where it's there but because of the
5 gas pressure that's there it never was released or, if
6 it was released, it was so minor that it never surfaced.
7 And then when it was hydrostatically tested, which is
8 one of the beauties of the hydrostatic test in that
9 case, where it would locate that small of a defect on
10 the hydrostatic test.

11 MS. BROCKWAY: Mr. Chairman, could
12 the witness explain 'welder's scale'?

13 A Welder's scale, it's residual weld metal that may have
14 just been over it. It may have been dirt. It may have
15 been sand, or something like that. It's not the welded
16 metal. It's just the leftover portion, the flux or
17 something, most likely sand. It could have been the
18 soil on top of it, hard clay, could have been in there
19 holding it in. It's such a small -- And the hydrostatic
20 test, at least it was probably 50 percent over the
21 operating pressure so it was a higher pressure to push
22 that liquid out.

23 Q Can the gas, if there were a pinhole leak, can the gas
24 then escape through the pipe but not surface? In other

1 words, could you have a small pocket of gas that is
2 associated with a pinhole leak that you're unaware of
3 and which might be sort of contained and therefore, from
4 a pressure standpoint, wouldn't necessarily be picked up
5 because it was a pocket and you've essentially enlarged
6 your area?

7 A Chances are, if there's gas escaping from the pipeline
8 in a pinhole leak, it would find its way possibly to the
9 surface and form either an odor or a discolor, an odor
10 if you were in the area or a discoloration of the grass.
11 And it will dry the soil out over time so you'll have a
12 discoloration, and that's one of the ways we look for
13 that type of --

14 Q And the pathway of any escaping gas for a pipe that's
15 several feet in the ground, is it always straight up or
16 can the gas, passage of gas, be on a somewhat horizontal
17 pathway and then up?

18 A It could possibly follow the ditch line because it's
19 already been disturbed along the pipeline. Again --
20 Yeah.

21 Q Part of the reason for my asking, and your counsel is
22 well aware of some of these issues, with hazardous waste
23 sites we also have gas issues, including methane gas,
24 and the pathway isn't always straight up. Occasionally

1 it can show up a distance away and, in some cases, one
2 I know of in Nashua, for example, in a building a fairly
3 significant distance away. So, that's why I'm asking
4 that and, to me, that's part of the issue associated
5 with these distances as it relates to gas lines. I
6 don't think it's purely the blast and setbacks to
7 protect from the blast but I would think also public
8 safety from any migration away from that site.

9 Another quick question about the wells. As you
10 know, wells are not only associated with the actual,
11 what you'd refer to as, the well itself in the well
12 casing but also the area of contribution to that well.
13 And so therefore, the area of contribution to a well
14 could be between the blast site and the well itself. In
15 other words, you may have no impact at all on the well
16 casing but you could have impact on the soils between
17 the well casing and the site. And is it possible that
18 there could be some movement of soils and earth
19 materials that are between the blast site and the well
20 within a radius around that well?

21 A (By Mr. Kretschmer) I can speak to that a little bit.
22 Basically that's a hydrological discussion. The
23 fracture zone for blasting is only within basically the
24 depth of the hole, so you're not going to fracture or

1 move any materials any further than that. If we're
2 talking a four foot hole you're looking four feet out.
3 That's real basic. So the actual movement of earth in
4 an area around the well is not possible by the blasting.
5 It is possible by activity and construction activity,
6 obviously. Also, if you are within that zone of
7 breaking rock, typically rock does not transmit water
8 real well. It doesn't hold water. What you do at that
9 point is basically fracture the rock and increase the
10 yield of the well, so those are possibilities.

11 But typically the blasting is not going to cause
12 fracturing outside of a certain zone, and the minimal
13 blasting we're doing here is not going to --

14 Q But the blasting together with the construction activity
15 could be within the so-called "influence zone" of the
16 well?

17 A Many activities occur daily within the contributing area
18 of the well.

19 Q Well, yeah, but people don't normally have construction
20 vehicles digging trenches in their backyard every day.

21 A Not every day, but it does occur on a regular basis
22 throughout New England.

23 Q And could any of that type of activity influence surface
24 water as it relates to its pathways?

1 A You're getting into hydrology. You may want to ask some
2 of the environmental people.

3 CHAIR: Sure. Okay. I'll do
4 that. Thank you. Michael?

5 **EXAMINATION BY ATTORNEY M. IACOPINO:**

6 Q I have some questions regarding the financial status of
7 Tennessee Gas. First of all, when did Tennessee Gas
8 become a division of El Paso Natural Energy or El Paso
9 Energy Corporation?

10 A (By Mr. Hamarich) El Paso Energy was late 1997.

11 Q Did you work for El Paso prior to that or did you work
12 for Tennessee Gas?

13 A I work for Tennessee Gas Pipeline, and when Tennessee
14 Gas was acquired by El Paso Gas in 1997 I stayed.

15 Q And is Tennessee Gas what we would call a wholly owned
16 subsidiary company or did El Paso just buy all of the
17 assets of Tennessee Gas, if you know?

18 A I'm not sure how it was merged. It was merged and it's
19 a division now. I think El Paso took everything --

20 A (By Mr. Haas) It's operated as a division of El Paso
21 Energy but I'm not exactly sure of the corporate, which
22 company owns stock in which --

23 Q Is it wholly owned by El Paso?

24 A Yes, El Paso is the only corporation that owns stock in

1 Tennessee Gas Pipe.

2 Q Does Tennessee Gas issue a separate annual report from
3 El Paso Energy?

4 A The 10-K that's issued is El Paso Energy, the entire
5 corporation.

6 Q There were no annual reports of either Tennessee Gas or
7 El Paso contained within your application. And on
8 behalf of the Committee, I would request if you could
9 get us the most recent, as well as maybe two years back,
10 just to supplement your application with respect to the
11 financial capability of the Company?

12 ATTORNEY SMITH: We have copies of the
13 most recent one here today to be provided to the
14 Committee.

15 Q Thank you. If you could give that an exhibit number at
16 the end of the hearing and just let us know later on.
17 You indicate in your direct testimony, Mr. Hamarich,
18 that Tennessee Gas will finance the construction of the
19 proposed facilities as part of its normal course of
20 operation for the Company. Does this mean that you are
21 going to be looking at outside financing sources for the
22 construction of this pipeline?

23 A (By Mr. Hamarich) No. My understanding is that there
24 is a certain amount of capital set aside within the

1 Company for projects, and this will be handled out of
2 that capital.

3 Q So there'll be no specific project financing from an
4 outside entity for this project?

5 A That's correct.

6 Q You also indicate in your direct testimony that the
7 choice of contractors will be selected, and you say on
8 a "bid basis." I take it you meant to distinguish that
9 from a low bid basis, is that correct?

10 A That's correct. We're going to bid it and we're going
11 to get the best bid. That doesn't necessarily mean the
12 low bid.

13 Q Do you limit the people you permit to bid on projects?

14 A Yes, we do.

15 Q And what entity within, or what division, or what office
16 within Tennessee Gas does that?

17 A Okay. The way Tennessee Gas works, I work for Tennessee
18 Gas Engineering. We're responsible for the construction
19 of the project. We control the contracts, but we have
20 -- El Paso Energy, the way it's structured now, there's
21 a materials and contract management group that works for
22 El Paso Energy. They provide contractual support. They
23 control the bidding process. We control the -- We work
24 together on who the bidders are and how it's done. But

1 from an audit and oversight standpoint, they control the
2 bidding process for us. We do all the work and manage
3 the contracts. We manage the contracts. Tennessee Gas
4 Pipeline Engineering controls and manages the bidding
5 process and the contractors.

6 Q And does the office that manages the bidding process, do
7 they have written specifications that they abide by in
8 managing bids?

9 A Yes, they do.

10 Q Now are those something that you would consider to be
11 confidential? Is that something that -- Or, perhaps,
12 has it already been filed somewhere?

13 A I don't think that's been filed nor has it been asked.
14 I think that goes in the other category of it's
15 information we have and I've never been asked to release
16 it. That may be confidential because that is a strict
17 internal --

18 Q I'm not asking you to release it but do you have a
19 general understanding of what they look at in
20 determining who can bid on these contracts?

21 A Yes.

22 Q Could you explain that please?

23 A It's basically sort of like what we're talking about
24 here. First off, is the company qualified to do the

1 work? Do they have experience doing this type of work?
2 If they've not done pipeline construction, or haven't
3 proven they could do pipeline construction in this type
4 of environment, then that would be one thing. Do they
5 do quality work? In other words, do we have a history
6 with them? Does Tennessee Gas Pipeline, or one of our
7 affiliates, have a history with them and have a record
8 of them performing quality work? We evaluate the safety
9 program, their violations, their health and safety
10 record, as what their incident rate is for accidents
11 because we don't want to hire a contractor that has a --
12 If they're going to have 450 people out there and
13 there's a high incident rate, we perform strict safety
14 audits. So there's the safety aspect.

15 We also look at the financial capability of the
16 company. We don't want a company that's not financially
17 capable of accomplishing that work, doesn't have the
18 financial resources behind them to assure that they'll
19 accomplish the work. So it's basically those things,
20 quality, experience in what they're doing, safety, and
21 their financial capability.

22 Q Let me turn your attention now to, there's been a lot of
23 mention of federal regulations, 49CFR, Part 192. Do you
24 know if those regulations are regularly amended or

1 supplemented by the Department of Transportation?

2 A I believe they are but I don't know how regular.

3 A (By Mr. Richardson) By 'regular', I guess you mean at
4 a set frequency?

5 Q Well, let me ask a different question. I understand
6 from the testimony that the National Transportation
7 Safety Board investigates accidents along transmission
8 lines, is that correct?

9 A Yes.

10 Q I take it that the federal regulations which are issued
11 by the Department of Transportation are based, at least
12 in part, upon investigations that are conducted by the
13 Safety Board, is that correct?

14 A Both that and investigations that the Office of Pipeline
15 Safety conduct themselves. It's also based on research
16 that the industry does. As Mark had mentioned, they put
17 some 20 million dollars a year into research. And it's
18 also based on the research that OPS finds on occasion.
19 So, I guess there's several sources of the changing
20 regulations. The regulations don't change on a periodic
21 basis. They do change as OPS is able to see that they
22 have a way of improving the code.

23 Q I guess my concern is there's been a lot of discussion
24 and a lot of questions and a lot of testimony about

1 places like Carlsbad and Edison, places like that. I
2 guess my question is, do the federal regulations, are
3 they informed by the investigations that are done by the
4 National Transportation Safety Board?

5 A Yes, they are. Carlsbad, of course, it'll be another
6 few months, probably even six months or so, before the
7 Carlsbad results are out. However, there was an
8 extensive report as a result of the NTSB Edison
9 investigation, and a good bit of that has been
10 implemented. There may be some other items that are
11 implemented as the regulations are developed.

12 Q And is Tennessee Gas made aware of those investigations
13 as well as aside from any changes in regulations?

14 A Wait a minute now. What --

15 Q Do you become aware of the actual results of these
16 investigations even though they may not be with your
17 company?

18 A Yes. As a matter of fact, we carefully read the NTSB
19 reports, the OPS reports, and the research reports that
20 come from the different sources. And that's one of the
21 inputs that we have to our operations and maintenance
22 manual, for instance, and to our emergency manual that
23 we've talked about.

24 Q And who is it, or which office of Tennessee Gas, that

1 has the responsibility of doing that?

2 A My old office. It's called Codes and Standards, at that
3 time. Today it's called Compliance Services.

4 A (By Mr. Hamarich) Compliance Services.

5 Q And where is the Compliance Services' office located?

6 A (By Mr. Hamarich) The main office is in Houston, Texas.

7 Q We also had some discussion about something called
8 headers. Is that where the two pipes are connected?

9 A (By Mr. Richardson) Or more pipes. Several pipes come
10 together into a header so that the pressure is common
11 there in that header.

12 Q So, does gas travel through the header, a header type
13 pipe? Are there headers on this line?

14 A (By Mr. Kleinhenz) No.

15 A (By Mr. Hamarich) Well, let me clarify, there's headers
16 at the meter station. There's a header, a small header,
17 before the gas goes through the meter back out and out.

18 Q Where? Where along the line?

19 A At the meter station when the -- In the meter station
20 piping. There's a header configuration in the meter
21 station piping.

22 Q At the meter station in Dracut?

23 A The meter station in Londonderry.

24 Q In Londonderry, okay.

1 A All meter stations, in fact. The majority of meter
2 station designs, if it's more than one meter run, more
3 than one, two, designs have a header system.

4 A (By Mr. Richardson) Headers occur, generally, either at
5 meter stations, compressor stations, or river crossings,
6 one of the three.

7 ATTORNEY M. IACOPINO: Thank you.

8 MR. CANNATA: I had a few more areas
9 I'd like to touch on, Mr. Chairman.

10 **EXAMINATION BY COMMISSIONER CANNATA:**

11 Q Do you recall the conversation, I believe it was with
12 the attorney for LNC, regarding the odorant?

13 A As far as mercaptan?

14 Q Yes, mercaptan, the odorant.

15 A Yes.

16 Q Would you tell us why you add that to your gas?

17 A Primarily it's added in population centers so if there
18 was a leak or something that you could detect gas. On
19 transmission lines, on distribution lines, it's added so
20 that you can smell the gas in your home. Otherwise, you
21 may not be able to smell the gas.

22 Q Is this done on a voluntary basis by these companies?

23 A I believe this is -- It's required in certain areas.

24 Q Is required by Part 192?

1 A It's required.

2 Q There was also a discussion that took place, and I
3 wasn't sure where it was going, regarding the amount of
4 gas that was used locally for the power plant. I
5 believe it was 60 dekatherms is the answer that you gave
6 was the local use. If we were to be just over the border
7 in Massachusetts, what percentage of the gas in
8 Massachusetts is being used local?

9 A (By Mr. Haas) I'm not sure I understand the question.

10 Q My understanding is the first three miles of this
11 project is in Massachusetts before it crosses the
12 border?

13 A Correct.

14 Q If we were in Massachusetts looking at this pipeline,
15 what percentage of the gas would be used locally? Is it
16 zero?

17 A Yeah, I don't -- The 60,000 that I was talking about, 60
18 versus 130, that's basically the combination of
19 EnergyNorth's firm contract and Distras Gas' firm
20 contract. There's two existing customers that take gas
21 in New Hampshire, and that's roughly the combination of
22 their contracts.

23 Q So none of the gas is used in Massachusetts? In other
24 words, this is an interstate pipeline, isn't it?

1 A (By Mr. Hamarich) From the eight and 12 inch none of
2 it's used in Massachusetts.

3 A (By Mr. Haas) That's correct.

4 A (By Mr. Hamarich) The eight and 12 that enters --

5 A (By Mr. Haas) That's right. Where we interconnect and
6 then go north from Dracut, there are no meter stations
7 until you get into New Hampshire.

8 Q So, could one draw the conclusion that the amount of gas
9 that's used locally is of immaterial value?

10 A (By Mr. Haas) I don't understand that question.

11 Q Do you understand the question?

12 A Yeah. As an interstate transportation system we pass
13 through certain communities, such as Dracut,
14 Massachusetts on this pipeline, Pelham, New Hampshire,
15 I believe Windham, New Hampshire, that really don't even
16 have gas service. And as an interstate transportation
17 system, we do go through certain communities that don't
18 have gas service to serve customers elsewhere on the
19 system.

20 Q So, is the amount of gas that's used local material?

21 A Not really, no.

22 Q And my last --

23 A It's not --

24 Q Excuse me, I'm sorry, go ahead. My last question, and

1 from a layman's standpoint, we've heard a lot of
2 testimony about the age of the eight inch pipeline, its
3 safety record, the five or six leaks that have been
4 developed during construction, and the fact that the 12
5 inch pipeline was put in built to federal standards, the
6 new federal standards, 192. And from a lay position, it
7 appears that if I take out an old pipeline that's 50
8 years old and put in a new pipeline that meets or
9 exceeds and go to extra steps to ensure safety,
10 reliability, those type of things, don't we wind up with
11 a better system than we have today? Without putting any
12 implications that today's system is inadequate, it seems
13 to me that it has to have some higher level of
14 performance.

15 A Yes, you could draw that conclusion without stating that
16 the existing system is inadequate in any way.

17 MR. CANNATA: Alright, that's all
18 the questions I have. Thank you.

19 MR. PATCH: Any other questions
20 from the Committee?

21 ATTORNEY M. IACOPINO: One other question.

22 **EXAMINATION BY ATTORNEY M. IACOPINO:**

23 Q With respect to the valves on the pipeline, I know
24 you've committed to auto close or gas operated valves,

1 is that correct?

2 A (By Mr. Kleinhenz) That is correct.

3 Q Are all the valves on the 20 inch pipeline going to be
4 that type?

5 A That is correct.

6 A (By Mr. Hamarich) Well, that's something -- Mr. Cannata
7 had asked for an outline of what we have. I believe all
8 the main line valves. There may be some side valves and
9 --

10 Q The main line valves are the ones --

11 A Because there's some consideration on how we isolate
12 this from the 12 inch line, and those are things that we
13 need to look at.

14 Q The main line valves are the ones that the distance is
15 required by the FERC regulations, is that correct?

16 A (By Mr. Kleinhenz) Correct.

17 Q I'm sorry, DOT. Thank you.

18 MS. BROCKWAY: If I could follow-up
19 on that, just to make sure I understand.

20 **EXAMINATION BY COMMISSIONER BROCKWAY:**

21 Q The purpose of the main line valves here is to, you have
22 them periodically so you can isolate sections of the
23 pipe quickly in case something did happen it would limit
24 the extent of it? Is that one of the purposes?

1 A (By Mr. Hamarich) Yeah, the purpose is to, for both
2 maintenance and emergency situations, to shut the supply
3 of gas off in that section of pipeline, whether you're
4 going to do a maintenance thing or should the pipe [sic]
5 be escaping for some reason.

6 MR. DUPEE: Thank you, Mr.
7 Chairman.

8

9 **EXAMINATION BY COMMISSIONER DUPEE:**

10 Q One question about the, going back to smart pigs for a
11 second. It's been a popular topic here today. I know
12 when you're looking inside buildings and ventilation
13 systems they're actually able to put TV cameras in these
14 little pigs they send around and photograph actually the
15 interior of duct work. Do your smart pigs in pipelines
16 perform a similar function, or can they, or are there
17 any that do?

18 A (By Mr. Hamarich) As far as I know the pigs haven't. We
19 have used something like that in meter stations, or in
20 small areas, where you can go in and probe and do some
21 isolated inspections. But, to my knowledge, I don't
22 know of any -- We've used that technology in areas where
23 we, kind of an advanced borerscope. We used to use a
24 borerscope. Now, with the technology, you can get that

1 camera in there and you can inspect the inside of little
2 areas on a pipe. But, to my knowledge, that's not in
3 production on the pipeline and I don't even know where
4 that's headed.

5 A (By Mr. Richardson) That's a very specialized use. It
6 has occurred, like Mark says. The problem is that the
7 external corrosion is generally a lot more likely than
8 internal corrosion, so you -- And, of course, a
9 television camera won't pick that up. So normally these
10 are magnetic flux-type devices that are looking at any
11 thinning of the wall of the pipe or --.

12 ATTORNEY V. IACOPINO: May I ask a question?

13 **EXAMINATION BY ATTORNEY V. IACOPINO:**

14 Q On your hydrostatic testing, do you intend to clean the
15 pipe before you do the hydrostatic testing?

16 A (By Mr. Hamarich) Yeah. During the procedure we'll
17 probably push some, and I have to read this, push a pig
18 in front just to -- The pipe should be fairly clean
19 before we do it. But we'll have a pig in advance of
20 putting the water in the pipe to take out any kind of
21 debris that may be left in there, for some reason, to
22 make sure that that pipe's fairly clean of debris prior
23 to putting in the water.

24 Q Such as welding scales and --

1 A Such as welding scale and whatnot. We probably won't do
2 a brush pig. And if for some reason we think there's
3 excessive scale because the pipe has been, there's
4 projects if the pipe's been sitting, we may do that.
5 But there is a process where we do that and then we fill
6 it with the hydrostatic test water.

7 Q Will you insert any chemicals into that water, cleaning
8 agents or corrosion inhibitors?

9 A No, we won't. I've got to look at my environmental
10 guide. No, we won't. If we do -- We won't. It's just
11 water, and I believe that's part of one of the
12 requirements of some of the permits to clean water.

13 Q So, if I understand this right, you're going to pig the
14 line but it's just a cleaning pig at that point?

15 A At that point it's a cleaning pig. Then we put the
16 water in it. We have a pig in front of the water and a
17 pig behind, or not pig behind, pig in front so we can
18 control the water and push the pig through the pipeline
19 so when we go in these ups and downs we don't get much
20 air in the hydrotest. We don't want to trap a lot of
21 air in there because the air pressure's up and the more
22 air in there affects the testing. Then when we de-water
23 the pipeline we run drying pigs. We have to run drying
24 pigs to get that pipeline dry to a minus 38 degrees

1 Fahrenheit dew point. And we'll run several drying
2 pigs, foam pigs, until that pipeline is dry because when
3 we put gas in, like we talked about, this gas is dry.
4 We want to make sure we don't have any residual water
5 left over from hydrostatic testing. If there is, and
6 it's late in the year, that's when you have problems at
7 the meter station with any freezing up. So, operations
8 has taught us well to dry that line prior to putting it
9 in service.

10 Q And when will you do the calliper pig?

11 A Then the calliper pig -- The calliper pig's after the
12 testing, before the drying, because the drying -- We'll
13 run the calliper pig -- We'll run a de-water pig to get
14 the water out then we'll run a calliper pig after that,
15 and then we'll do the drying. We don't want to dry
16 before because if, for some reason, the calliper pig
17 finds a defect, we have to go in there and cut that
18 piece of pipe out and put in other pipe that's already
19 been tested. We adjust those welds and then we dry the
20 pipeline.

21 Q Following up on Mr. Cannata's question about the
22 efficiencies of running the smart pig, doesn't this seem
23 to be the efficient time to run the smart pig?

24 A (By Mr. Kleinhenz) Compared to later on?

1 Q Yeah, compared to any time. You're running all these
2 pigs through and the pipe is in a state where it's just
3 been cleaned. It would seem to me that it would be the
4 most efficient time to run the smart pig?

5 A (By Mr. Hamarich) There's some thoughts on that and
6 we've gone through that. If it's three years or zero
7 years, again, we prefer it out in the future. It looks
8 on the surface that that may be the obvious time but the
9 best way to get an intelligent pig run is to run it with
10 gas, number one. So all these pigs we've been running,
11 we've been either running them with air, our cleaning
12 pig, or we've been running them with water or we've been
13 running the drying pigs with compressed air over and
14 over. And you want to do it on gas and you want to do
15 it under normal flow conditions so you have a nice,
16 steady flow. So one of the things is you'd still
17 probably have to load that line, get the flow conditions
18 going, get a normal flow, and with this new 20 inch
19 pipeline and configure it such. So you'd still have to
20 load it with gas and you'd still have to put the pig in.
21 So it's a little different process but that's a fair
22 assessment. But that's one of the things we've looked
23 at.

24 Q At the risk of getting everybody mad at me, in talking

1 about corrosion you emphasized the dry gas. Well, you
2 emphasized dry gas preventing corrosion and that
3 corrosion normally came from impurities in water or
4 condensation in the pipe. No one seems to have
5 mentioned any of the failures due to metalogical
6 deficiencies of the pipe. Now, do I take it that you're
7 presenting to the Committee that the type of steel
8 that's going to be used will eliminate most of those
9 failures that have occurred in the past such as hydrogen
10 embrittlement, stress corrosion, cracking, liquid metal
11 embrittlement, and all those type of failures?

12 A The steel that we're proposing to use, we've developed
13 standards to, by the chemical compositions of that
14 steel, to mitigate any exposure to those type of things
15 and reduce any inherent risk of those type of failure
16 modes to be established within this pipeline.

17 Q And does the 192 regulations specifically set forth what
18 type of steel to use?

19 A They don't. It's API 5L. It's the API codes, P31A, and
20 Tennessee has taken those minimum codes. And that's one
21 area I feel we've expanded in some of the areas --

22 Q Those are industry standards?

23 A Those are industry standards on that.

24 ATTORNEY V. IACOPINO: Thank you, Mr.

1 Chairman.

2 CHAIR: Jeff?

3 **EXAMINATION BY COMMISSIONER TAYLOR:**

4 Q I'd like to go back, if I could for a minute, to the air
5 photo that is on the easel and more particularly to the
6 air photo that was included in the material distributed
7 last week, "Sheet 13 of 13," which we already discussed
8 as an alternative investigation that was done for FERC.
9 As I look -- And I guess I want to preface my remarks by
10 saying I'm very sensitive to the fact that the gas line
11 has been in place since 1952, in operation since 1952,
12 and it is the educational facilities that have been
13 developed by the Town of Londonderry, by the Londonderry
14 School District, that has brought those facilities in
15 close proximity to the existing gas line. Nevertheless,
16 as I look at this, as I scale this off, we've got a
17 school building that is within 40 or 50 feet within the
18 gas line. It appears that Alternate 1, as designed and
19 investigated, although it's a half mile in length, it
20 moves the separation out to a total of something that I
21 scale to be about 200 feet. Would it be possible for
22 the Applicant to analyze an alternative 1A? There is a
23 bend, a sharp bend, in the existing pipeline that occurs
24 just to the west of the more northerly baseball field.

1 If that straightaway section were continued north until
2 such time it could be brought into the alignment labeled
3 "Alternate 1," I would be interested in seeing an
4 analysis that exactly replicates the analysis that was
5 done for the FERC Alternate 1 for this shorter section
6 that would also lie 200 feet away from the school? If
7 I can go to the board and show you --

8 A (By Mr. Hamarich) I understand.

9 Q But essentially, about where the left field foul pole is
10 on that second baseball diamond, there's a sharp bend in
11 that pipe. And basically I'm suggesting that if you
12 continued that straightaway section north until it could
13 be brought into the alignment of Alternate 1, you would
14 capture the value of the 200 feet of separation between
15 Alternate 1 and the school while minimizing the amount
16 of construction that would be out of the existing right-
17 of-way?

18 A (By Mr. Hamarich) Can I ask what would be the purpose
19 of performing that analysis at this time, just to
20 understand where you're going with it?

21 Q Would you comment -- Intuitively, it seems to me that it
22 is safer to have a gas pipeline 200 feet away from a
23 school building than 40 or 50 feet away from a school
24 building?

1 A So, it's purely, the reason, just a distance reason from
2 that?

3 Q Yes sir.

4 A And realizing the 12 inch pipeline would still be there,
5 --

6 Q Yes, I do.

7 A And our premise has been on this routing all along is
8 that we looked at some of these alternatives and you
9 could almost extrapolate the figures, with your analysis
10 you could almost -- You've got the figures we used for
11 the 1. You could almost extrapolate the data looking at
12 the maps as to how far, how much longer, it is and get
13 a pretty good picture. It would be basically the same
14 analysis. We would still have the 12 inch there. As
15 far as our FERC application, FERC's been the one that's
16 been deciding on the routing, based on our proposal and
17 where we propose to put the pipeline, and we've been
18 sticking with the replacement project as far as our
19 primary route. And we felt the corridor's already
20 established, the 12 inch line is already there. And
21 that what we're trying to establish today is that the 20
22 inch pipeline can be both constructed and maintained in
23 that same corridor and be as safe and still protect the
24 safety of the public. The problems with deviating,

1 again, even if FERC justified that, one of our
2 discussions with FERC would be -- And we still don't
3 have our final order from FERC and they could very well
4 make that determination. What we quoted here was a
5 preliminary environmental assessment. So should FERC
6 come back with this recommendation or others, we would
7 have to review that alternate.

8 And one of the things, is that also school
9 property? Would we have another corridor where there
10 would be encroachments in future years? Would there be
11 two pipelines, one on either side of the ballfields? So
12 you look at things like that and it's kind of a short-
13 term solution to maybe a non-issue. And that's, I don't
14 want to downplay it but, that's where we're looking at
15 this from so. It's a scenario where you're separating
16 the 20 inch pipeline from the existing corridor, and
17 there's some other inherent things in there.

18 Q I guess I understand all that. My question still
19 stands. I could extrapolate these but I guess I would
20 like the same team that did the Alternate 1 analysis to
21 do this Alternate 1A analysis so that we are sure that
22 whatever assumptions they made in proposing Alternate 1,
23 or evaluating Alternate 1, would be consistent with any
24 analysis that was done on this?

1 A We could do Alternate 1 analysis for you.

2 Q Thank you.

3 MR. CANNATA: A little bit of more
4 information, Mr. Chairman?

5 **EXAMINATION BY COMMISSIONER CANNATA:**

6 Q This "Sheet 13 of 13" is not of the best quality but.
7 In looking up over there, this appears to go right
8 through the clearing that's there, this appears to be a
9 clearing, and I'm wondering if that's developed or what
10 is that, if anybody knows? I am not familiar with it.

11 A (By Mr. Hamarich) It's going to be a soccer field if
12 it's not.

13 A (By Mr. Kleinhenz) You would basically have created an
14 island, a pipeline on both sides of the soccer field.
15 But what I'm saying is, from what you're asking to
16 extend this alternate alternate further to the west,
17 continue north until it -- yes, and we can extend that.

18 Q Thank you.

19 MS. BROCKWAY: Mr. Chairman? Just
20 talking with Mr. Taylor.

21 **EXAMINATION BY COMMISSIONER BROCKWAY:**

22 Q If it turns out that the 1A as described here and that
23 you'll be working on goes right through the soccer
24 field, do you think you might --

1 A (By Mr. Hamarich) It would --

2 Q It would? You might also consider -- I believe that the
3 objective is to create a radius of 200 feet around the
4 school building. And one way to do that, without going
5 into the soccer field, would be to pull off the existing
6 route between the two places where the pipeline bends,
7 one just to the south of the soccer field and one right
8 by the school, so in that stretch there, between the
9 soccer field and the school, it would come out off of
10 that and around. I see nodding heads.

11 A You're staying together with the thing and then -- I
12 understand that.

13 CHAIR: This may come up in
14 some of the testimony later but, is there a master
15 planning effort for the remaining school property in the
16 Town of Londonderry, any sort of comprehensive plan for
17 the remaining Town? Is anyone aware of any of this kind
18 of activity?

19 ATTORNEY GOODMAN: Mr. Chairman?

20 CHAIR: Yes.

21 ATTORNEY GOODMAN: As you may recall, we
22 asked for the right to submit additional material and
23 respond to the matters that were filed. And I think we
24 were given the right to respond to this route

1 alternative, and I expect to thoroughly review with my
2 client and to provide comments and also an engineering
3 analysis of that very issue. We will get back to you
4 with proposed future use and with the Town and school
5 board's recommendation or comments on route alternatives
6 for that section. I think that's a very important issue
7 for the Town that we hope to comment on in the ten day
8 period.

9 CHAIR: But during these
10 hearings, just as a point of information, is there some
11 sort of formal comprehensive planning or master planning
12 effort underway for the balance of the Town owned or
13 school owned property in this area?

14 ATTORNEY GOODMAN: I assume there is
15 because I had a conversation with the Town Manager
16 asking about future growth and there are predictions for
17 future growth, and I assume there are predictions for
18 this schoolyard. And I will submit that all of the
19 property behind this school there is owned by the school
20 district. That's my understanding. All of that
21 undeveloped land which extends well behind the
22 schoolyard is school district property, in my
23 understanding.

24 CHAIR: Well, maybe at some

1 point before the end of these hearings you could address
2 the specific question that I asked.

3 ATTORNEY GOODMAN: If there is a regional
4 development plan?

5 CHAIR: No, if there is a
6 local --

7 ATTORNEY GOODMAN: A local master plan?

8 CHAIR: Local planning effort
9 underway? I've heard sort of anecdotally from people
10 that they understood that there was some sort of local
11 comprehensive or master planning effort underway, in the
12 early stages, as it relates to the balance of this
13 property. I'm just wondering if that's true or not.
14 And if it is, when did it start? When is it going to
15 end? It would be relevant to this discussion later on
16 in the proceedings. It's now almost five o'clock. We,
17 I think, have completed our Committee questioning. How
18 much time will your follow-up take, Greg?

19 ATTORNEY SMITH: I think it would take
20 about ten minutes. I have just a few questions.

21 CHAIR: Okay. Why don't we
22 try to finish that and then that will conclude today.
23 And then I'll want to talk about what time we start
24 tomorrow and also try to schedule Mr. Marini tomorrow,

1 unfortunately.

2 ATTORNEY SMITH: We mentioned earlier
3 that we have the year 2000 K-1 for El Paso Energy. I
4 have those copies here. So if members of the Committee
5 would like those handed around so they'd have them this
6 evening, they're copied. And they would be, for the
7 record, they would be Exhibit A-85. And we understand
8 we were asked to get two other years. We'll try to get
9 those quickly. I'd also point out that in the FERC
10 application, Volume I of II, there's a lengthy
11 discussion of El Paso Energy and El Paso Energy
12 Companies. It was called to my attention if anybody
13 wanted to refer to that this evening that's already in
14 the record the State has. If I might ask Rob Haas to
15 come to the microphone.

16 **REDIRECT EXAMINATION BY ATTORNEY SMITH:**

17 Q Just briefly, I'll hand you a document and ask if you
18 could tell everyone what it is?

19 A (By Mr. Haas) Yes. This is an excerpt from Tennessee
20 Gas Pipeline's FERC's gas tariff, Sheets 305 through
21 310, and it speaks to gas quality specifications of the
22 gas entering and exiting our system.

23 Q That is because you're a transportation company you
24 receive supply at one end and deliver it at the other,

1 is that right?

2 A That's correct.

3 Q And this tariff regulates the quality of the gas you'll
4 receive and deliver?

5 A Yes. This is our specification that speaks to the
6 specific quality of gas that we allow in the pipeline
7 stream and that we commit to delivering to our
8 customers.

9 ATTORNEY SMITH: I'd like to make that
10 an exhibit, Mr. Chairman. I only have one copy at the
11 moment but we could reproduce it or if anyone else would
12 like to look at it I have it here. And that would be A-
13 86 for the record.

14 Q Mr. Richardson, you've heard the testimony here today.
15 Without meaning to diminish, in the slightest, the
16 understandable concern about the worst cases or the
17 kinds of damage that could be caused by a pipeline,
18 would it be fair to characterize much of that testimony
19 as addressing the severity of the impacts of an
20 incident?

21 A (By Mr. Richardson) Yes, I think that's primarily what
22 has been dealt with.

23 Q And do you understand, again, without diminishing any of
24 those concerns, that in our society we frequently

1 evaluate such matters by an analysis of what we call the
2 risk or the probability that such an event would occur?

3 A Yes.

4 Q So, for example, if an airplane were to crash and any of
5 us were riding on it that would be a catastrophic event
6 and it would, no doubt, be an awful event. But we
7 approach that sort of activity by evaluating the risks
8 that the airplane we ride on would crash?

9 A Yes, the probability of it happening.

10 Q In the earlier testimony there were questions, I think,
11 about whether any arithmetic or statistical or factual
12 information might be available on damage, injury, or
13 death that's caused by interstate gas pipeline
14 transmission systems. And are you aware that there is
15 any such information available and you know of it?

16 A Yes, and, as a matter of fact, at one of the breaks we
17 managed to get these figures together. During the
18 period from -- Let me get my glasses on. Excuse me a
19 second. During the period from the beginning of 1986 --

20 CHAIR: What are you reading
21 from? Could you identify --

22 A I'm sorry. This is an incident statistics by year from
23 the Office of Pipeline Safety, and it deals with natural
24 gas pipeline transmission operations during the period

1 1/1/1986 through 7/31 of the year 2000. It does not
2 include the Carlsbad incident.

3 CHAIR: Is this an exhibit
4 that we already have or is this --

5 ATTORNEY SMITH: No. It's one I intend
6 to offer, Mr. Chairman.

7 CHAIR: Okay.

8 Q And this provides some information about, as you would
9 describe it for us, about incidents causing damage or
10 death?

11 A Yes. During that period, which is 14 and a half years,
12 there were a total of 54 fatalities in the United States
13 resulting from gas pipeline transmission accidents. We
14 did a little calculation here. That means that there
15 were an average of three and a quarter deaths per year
16 in each of those 14 and a half years. And going to some
17 statistics that came from the National Safety Council,
18 they base their statistical base on there being
19 265,284,000 people in the United States. So I used that
20 same figure. That comes out -- There is a probability
21 of one out of every 81,620,000, one person out of every
22 81,000,000, being killed by a natural gas transmission
23 accident during one year. That can be contrasted to
24 such things as a lightning strike, which is 20 times as

1 likely to occur. That figure is one person out of every
2 4,210,857 people. One person out of that many will be
3 killed each year as the direct result of a lightning
4 strike.

5 There's other things here, dog bites, wasp stings,
6 fireworks. Actually fireworks, amazingly enough, is the
7 least likely. It comes out like one person out of every
8 29 and a half million people will be killed by
9 fireworks. So, pipelines are way, way down below that.
10 They're 20 times -- The lightning strike is 20 times as
11 likely to kill a person as a natural gas pipeline
12 transmission.

13 ATTORNEY SMITH: Thank you. I'd like
14 to offer that as Exhibit A-87 in the record.

15 Q Mr. Richardson, there's been discussion about different
16 types of gas, I guess is the common term, methane,
17 propane, butane, and so forth. Do you know whether
18 propane in tanks, and its properties, would be such that
19 it could present a risk equal to, or could present a
20 risk equal to or greater than, a gas transmission
21 pipeline?

22 A In my belief it's a considerably more hazardous
23 situation. Propane is heavier than air. In a still
24 situation, a propane tank can either leak, rupture, or

1 overpressure due to heat on the surface. The propane
2 that escapes from the tank will seek a low lying level.
3 It will seep into a basement, for instance, and it will
4 stay there for long periods of time. And during that
5 seeping in it can pick up air entrainment, and will pick
6 up air entrainment, which makes it an explosive mixture.
7 All it takes is some sort of an event such as a spark,
8 a hot water heater turning on, or anything like that, to
9 set it off, and there's a tremendous amount of energy
10 release when a propane/air mixture goes off.

11 As a matter of fact, the Defense Department played
12 around with using propane air bursts in lieu of atomic
13 bomb blasts to demoralize and kill off the enemy in
14 warfare. They've never used it but they have looked at
15 it.

16 Q So propane can burn or explode with catastrophic
17 consequences, is that right?

18 A Yes sir.

19 Q Mr. Kleinhenz, I'm going to show you this document and
20 ask if you can tell us what it is, if you know?

21 A (By Mr. Kleinhenz) Yes. this is a proposed site plan
22 for the Londonderry kindergarten.

23 ATTORNEY GOODMAN: Is this an exhibit?

24 ATTORNEY SMITH: No, it is not.

1 Q And what is the date on this document?

2 A The date received is August 21, 2000. There's also a
3 date here for the original plan of May 15th of 1997.

4 Q Alright. And does this plan for the kindergarten in
5 Londonderry, to your knowledge, include a proposal to
6 utilize propane tanks as an energy source?

7 A Yes.

8 Q How many, if you know, and how large are they?

9 A This is a preliminary plan and on this preliminary plan
10 it shows eight tanks.

11 Q Do you know how large they would be?

12 A Yes. In discussions, I have it written down, I believe
13 they are 1,000 gallon tanks.

14 Q And do you know whether propane tanks are currently in
15 use at any of the other Londonderry schools which have
16 been discussed in this proceeding?

17 A Yes.

18 Q Could you tell the Committee to what extent propane
19 storage tanks are used at these school facilities?

20 A Yes. At the current high school there's an 18,000
21 gallon, below ground, propane tank that is approximately
22 200 feet from the school itself. And the middle school
23 also has a 500 gallon tank that is approximately 35 feet
24 from the school, and that is an above ground tank.

1 Q Is that all the tanks that are located at these
2 facilities?

3 A Yes.

4 Q So again, what is the capacity of the tanks that are
5 there?

6 A Eighteen thousand gallon and again, that is a below
7 ground tank.

8 Q And is there a 15,000 gallon tank there?

9 A Yeah, that's an oil tank. That's not a propane tank.

10 Q I see. Alright.

11 ATTORNEY SMITH: We'd like to mark this
12 plan for the kindergarten as Exhibit A --

13 ATTORNEY GOODMAN: I'd like to object.

14 ATTORNEY SMITH: A -- Well, let me just
15 finish. I'd like to mark it as A-88 for identification
16 purposes, Mr. Chairman.

17 ATTORNEY GOODMAN: I'd like to object.
18 It's a preliminary plan. There was no advance notice.
19 I haven't been able to review it with my client. We
20 have no idea if that's still planned. I don't know
21 anything about it. I don't see why it's relevant to the
22 evidence, in any event. So I object on relevance. I
23 object on procedure.

24 CHAIR: This document was not

1 presented previously?

2 ATTORNEY SMITH: I just became aware of
3 this document today. It's a document that my
4 colleagues' client has prepared, so I would imagine that
5 they know about the facilities there. I just learned
6 about it today. And I learned about it today because
7 there's been inquiry from the Town of Londonderry about
8 the types of risks that our proposed facilities might
9 represent adjacent to their school buildings. And, so,
10 I'm offering this as redirect to respond to the issues
11 that they've raised after we offered our testimony.

12 I think it puts it in perspective, Mr. Chairman.
13 I don't believe that additive risks are going to give us
14 any greater comfort, any of us. But we are all exposed
15 to various risks and I think we ought to understand, the
16 public ought to understand, given the importance of
17 these hearings, that there are various types of risks in
18 this area. And some of these risks are being introduced
19 into the area by the School District, which is also
20 opposing --

21 ATTORNEY GOODMAN: I object.

22 ATTORNEY SMITH: -- The type of
23 facility that we would have located here, so I think
24 that ought to be a part of the record.

1 ATTORNEY GOODMAN: I strongly object.
2 The school district is not proposing to build a
3 pipeline. The school district is not on trial here.
4 We're not an Applicant. And I object to the
5 characterization of the school district as if it's
6 placing itself at risk. It's the obligation of
7 Tennessee, who's come before this Commission to build a
8 20 inch pipeline where there was an eight inch pipeline,
9 to comply with existing development. And they're
10 alleging that building schools on school property, which
11 was school property long before the pipelines were
12 there, is like, somehow, illegal conduct or unsafe or
13 unresponsible [sic] conduct. They're the company who's
14 presenting themselves as being such a safety expert,
15 that there's no risk here. Well, if there's no risk
16 than it's not unreasonable for the school to be located
17 there, and I object.

18 CHAIR: Why don't we, for now,
19 just mark it for identification and then we'll go back
20 to this issue later. And you can also have an
21 opportunity to review it for accuracy as well.

22 ATTORNEY GOODMAN: Thank you.

23 ATTORNEY SMITH: I believe that's all
24 that I have, Mr. Chairman. Thank you.

1 ATTORNEY WAGELING: I have no further
2 questions. Thank you.

3 ATTORNEY GOODMAN: I have no questions.

4 ATTORNEY ROCHWARG: I have one question
5 for Mr. Richardson.

6 **RE-CROSS-EXAMINATION BY ATTORNEY ROCHWARG:**

7 Q This document which has been marked as Exhibit A-87, I
8 assume it's a composite exhibit because I see it comes
9 from two different web sites. They do, in fact, -- The
10 information that you testified about today and its
11 accuracy came from the Internet, didn't it?

12 A (By Mr. Richardson) Actually, it came out of Mark's
13 briefcase. Somebody had given it to him. I have seen
14 both of these before. I really don't remember where I
15 saw them but these copies came out of his briefcase.

16 Q Well, if you'll look with me at the bottom of Exhibit A-
17 87, and I can share my copy with you, clearly it was
18 generated off the Internet web sites, correct?

19 A That's the first one. Yeah, the National Safety Council
20 document.

21 Q Correct. And the second document was from the Office of
22 Pipeline Safety web site, correct?

23 A You'll have to bear with me for a minute. It may well
24 have been. Yeah, it looks like it was, sure. Sure.

1 ATTORNEY ROCHWARG: No further questions.

2 ATTORNEY SMITH: Could I just ask Mr.
3 Hamarich to explain where he got the document that came
4 out of his briefcase?

5 CHAIR: That would be highly
6 relevant. Thank you.

7 MR. HAMARICH: I got the document at
8 the hearing in Londonderry on the 25th of September.
9 There was a lot of information exchanged and a gentleman
10 stood up in the meeting and he went through this. He
11 presented his view to the Town of Londonderry. After
12 the meeting he came over and talked to me and he handed
13 me the document and he said, "This is some information
14 you may want in your briefcase just to put things in
15 perspective about risk and chances of dying."

16 ATTORNEY SMITH: This was discussed at
17 that public meeting in Londonderry?

18 MR. HAMARICH: It was on the record.
19 And the gentleman there, I don't know who it was, he
20 stood up, it was open to the public, and he read this
21 same information.

22 CHAIR: Could you, perhaps,
23 given that history, try to go back and verify where the
24 information came from, what the sources are, and provide

1 that to the Committee?

2 MR. HAMARICH: Yes.

3 CHAIR: With that, we're going
4 to end this evening's hearing. We'll pick up again
5 tomorrow morning. How early can people start tomorrow
6 morning?

7 **OFF THE RECORD**

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